VOL. 171, NO. 6 AMERICAN DECEMBER, 1949

Gas Journal

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CHAPTER 1

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CHAPTER 2

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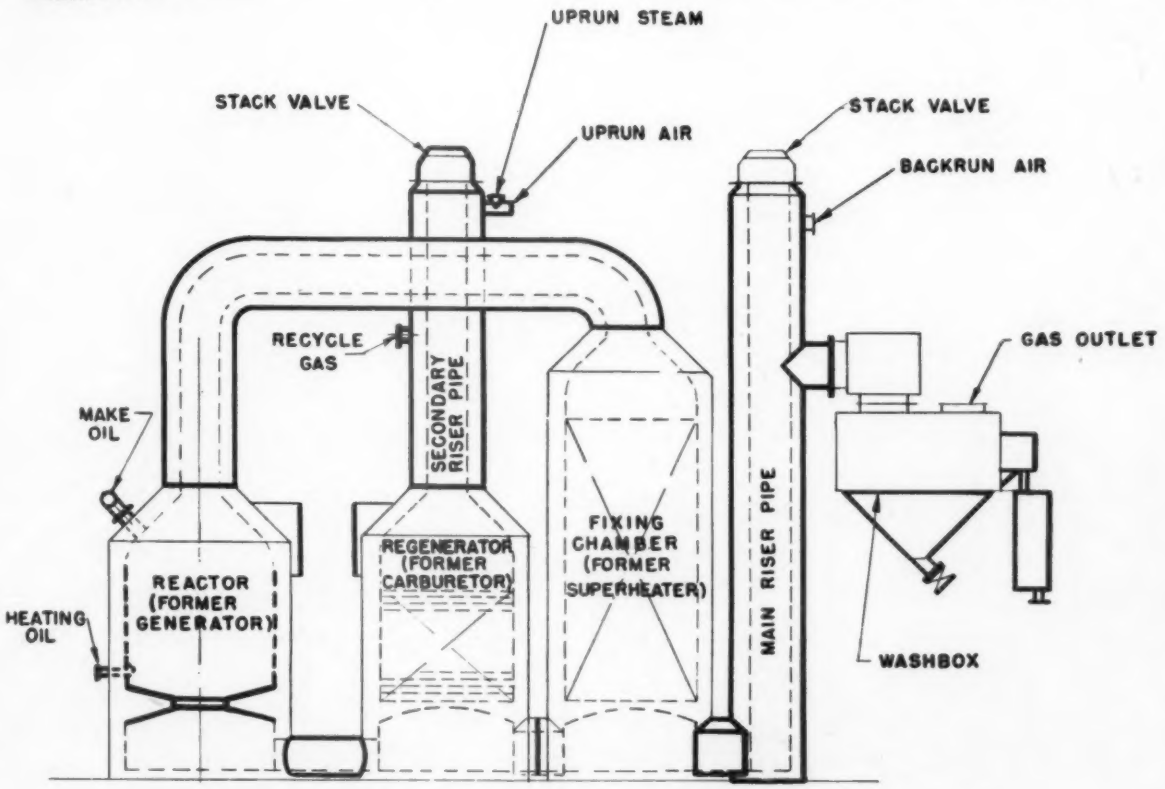

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AMERICAN GAS JOURNAL, December, 1949. Vol. 171, No. 6. Published monthly by American Gas Journal, at 34 North Crystal St., East Stroudsburg, Pa., Executive and Editorial offices at 205 East 42nd Street, New York 17, N. Y. Entered as second class matter October 7, 1928, at the post office at East Stroudsburg, Pa., under the Act of March 3, 1879. Printed in U. S. A.

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assessments or rates (taxes in another form). By avoided replac
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lived pipe, cast iron pipe has saved the publi
many millions of dollars in direct or indirect taxe
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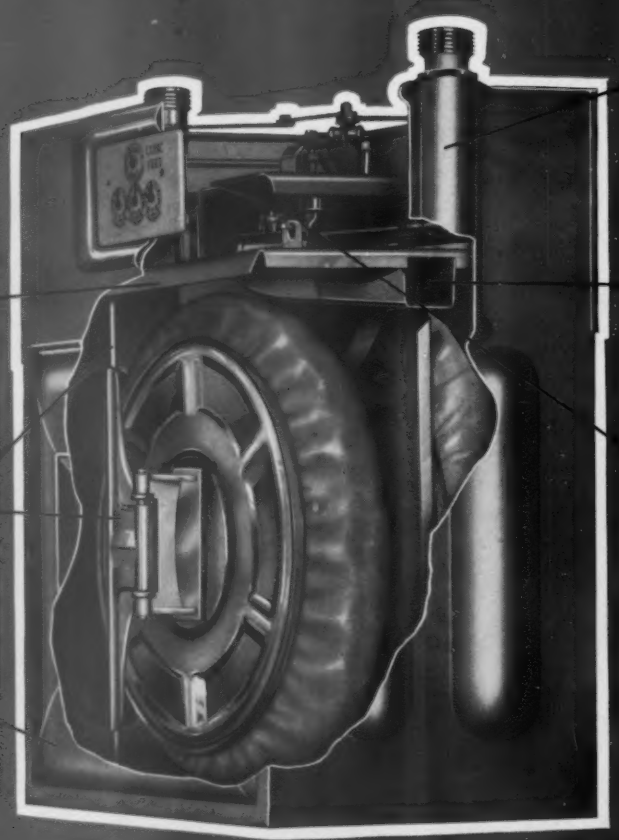
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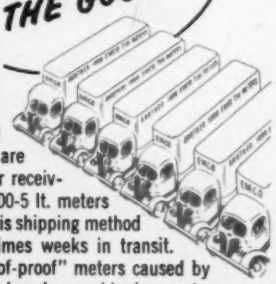

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AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 171 DECEMBER 1949 NUMBER 6

This month...

. . . There is an air of almost brazen effrontery in dedicating a column to self praise right at the Christmas season when men of good will are rightly concerned with enhancing the happiness of others rather than recounting their own small triumphs. But the JOURNAL seemed to hit the jackpot of editorial interest in the lead article, "Natural Gas in New Pastures" last month; and as every percentage player knows, the jackpot doesn't turn up often enough for it not to be news.

With characteristic frugality that may yet prove our undoing, we increased our press run by only a few hundred, and as a result within five days they had all been sent out in response to bulk orders ranging from five to 25 copies. The next move was to order 1000 reprints, and now they are all gone too: but we have another order for 500 in the works, and they should be along any day now. Of course, we only mention this so our friends will understand our tardiness in filling their requests.

. . . Our puckish ruminations on "Gas Has Got What" elicited a few letters, too, mostly from unregenerates who take pleasure in encouraging our penchant for destructive criticism. A very stately letter from a vice-president set us right, however. He says the slogan has bothered the gas industry's competitors quite a bit, and some of them have been irked at their own failure to invent "a counter-irritant nearly half so good as this one." If it is an irritant that the industry needs, we confess Gas Has Got It has got it.

. . . With natural gas moving into new areas, not only in the East, but in Michigan and Wisconsin, and the South, we are slanting our editorial policy for the next year strongly toward articles dealing with the problems of changing manufacturing practices and conversion from manufactured to mixed or straight natural gas sendout. It seems a trifle foolhardy to tip off the competition to our next move. But after all, it's almost Christmas.

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Elliott Taylor • Editor

Howard F. Weeks • Associate Editor **John F. Falvey • Financial Editor**

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NATURAL GAS FITS INTO THE MANUFACTURED GAS PICTURE

Our current and recent work in making provisions for the utilization of natural gas in manufactured gas plants is another example of continuing progress in fitting available fuels into the manufactured gas picture. To a great extent, this progress is accounted for by the flexibility of the cyclic carburetted water gas process which permits the use of many different kinds of fuels and enrichers.

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Editorial:

Christmas 1949

AS WE APPROACH the season of the year given us to celebrate the greatest of all Christian holidays, Christmas, we find that a sometimes glib and facile pen fails us in the face of the sheer simplicity of the sentiments that we strive vainly to express.

We grope for words to convey adequately the Christmas message that springs from the deepest recesses of the human heart. Our own limitations rise and overwhelm us, as we are conscious of the love and loyalty of friends and of affection and kindness that must at best, be but meagerly deserved.

How singularly futile seem all the bombast and bluster, the striving for recognition, the vain quest of material gain, when we see them under the tranquil light of the great star that shone over Bethlehem of Judea.

A recurrent miracle of a magnitude no less than any that the Master Himself ever performed, we are privileged to see repeated before our eyes every year on the anniversary of His birth. It is the miracle of momentary peace and good will that silently engulfs a world so inured to struggle and disdain. It is the miracle of hope and promise that transforms and revives a despairing mankind.

That that miracle may touch us all, and that its Divine munificence may remain with us throughout the new year that lies ahead, is our Christmas wish for all of our friends, everywhere.

American Gas Journal

Marching through Georgia: Heavy specialized equipment helps make the modern pipe line possible. Here a sideboom tractor is at work.

Headed for Points East

Along Transcontinental's 1876 Mile Line

Cast iron river clamps are used on the line to overcome bouyancy going through swamps and under rivers.

Cold smooth bending is being used on this 30-inch line from Texas to New York. Here is a heavy hydraulic bender in Alabama.

Left: The doping and wrapping machine helps in the completion of a long section of the new line.

The 1949 construction program for the line called for nine spreads, or a total of 605 miles. Typical forest cover and bad weather of the summer are shown in this welding scene.

Fair Labor Act Amendments Analyzed With Important Changes Noted

by James H. McGourty
Labor Relations Analyst

INDUSTRY has until January 25, 1950 to adjust to the new wage hour regulations, passed by Congress before it recessed, and signed into law by President Truman on October 26, 1949. The new regulations are amendments to the Fair Labor Standards Act of 1938.

Generally, businesses covered by the old wage hour law continue to be covered by the new set of amendments.

The old law provided that firms whose employees were engaged in processes or work "necessary" to the production of goods for interstate commerce were covered by the act. The new law provides that companies whose employees are engaged in processes "closely related" or "directly essential" to the production of goods for interstate commerce are affected by the law.

Employees of utilities furnishing gas, electricity or water to companies manufacturing, mining or producing goods for interstate commerce are included under the coverage of this law, in addition to all firms producing goods or services for commerce.

The new law, like the old one, provides that white collar employees are subject to the provisions of the law. The exemptions from this law for executives, administrative, professional employees and outside salesmen are still in the tentative stage under the Wage Hour Administrator. This schedule of exemptions is currently being commented upon by industry as outlined below. Thirty days notice will be given by the Wage Hour Administrator before the rulings become final and official.

What the Law Does

The Amended Law sets the minimum wage for all employees within the continental limits of the United States, who are covered by the act at 75 cents per hour. Puerto Rico and the Virgin Islands are not affected by this increase.

It exempts about 200,000 employees from coverage by virtue of the local nature of their activities and the change in the qualifying phrases of the act from "necessary" to "closely related" or "directly essential" to the production of goods and services for commerce.

In some cases it revises the method of determining when overtime should be paid and for calculating such overtime pay. The old rule of time and one-half pay for hours worked in excess of 40 hours per week still holds, but the new law lists certain types of payments which may be excluded from an employees' "regular rate" for purposes of computing overtime.

The types of payments which may be excluded from computation when figuring an employee's regular rate for purposes of calculating overtime, but which may not be credited against overtime payments are:

1. Gifts paid on special occasions, the amount which is not contingent on number of hours worked, production or efficiency.
2. Bonuses, the amount of which is at the sole discretion of the employer and not the result of a contract or a promise which would cause the employee to expect such payments regularly.
3. Profit sharing payments, thrift and savings plan payments. The payments must meet the requirements of regulations to be issued by the Wage Hour Administrator.
4. Payments for occasional periods when no work is performed due to illness, vacations, holidays or the failure of the employer to provide sufficient work.
5. Funds reimbursed by the employer for traveling or other expenses incurred by an employee in the furtherance of the employer's business.
6. Contributions to pension and welfare plans.

Daily or weekly overtime in excess of the employees' normal or regular working hours, extra pay for work performed on Saturdays, Sundays, holidays, regular days of rest or the sixth or seventh day of the workweek or work performed outside the hours established as the basic, normal or regular workday or workweek must be paid for at, at least, one and one-half times the rate established in good faith for like work during the workday or workweek. These payments must be excluded from the regular rate and may be credited against overtime pay.

Changing Clothes or Washing Up

In its definition of working time the new law specifies that the parties to a collective bargaining agreement may agree to exclude from working time any time spent in changing clothes or washing up at the beginning or the end of the workday.

When it is desired to pay an employee, working irregular hours, a guaranteed weekly salary, the employee and the employer must agree upon a regular rate of pay, not less than 75 cents an hour. The agreement between the two must provide for a weekly, guaranteed salary for a workweek of not more than 60 hours and for the payment of time and one half times the regular rate of pay for all work performed in excess of 40 hours per week.

When computing overtime for pieceworkers, the new law represents a considerable simplification over the old process. It is now necessary only to pay one and one-half times the piece work rate paid during normal working hours. The rate of pay paid during normal working hours must average at least 75 cents per hour. As an alternative, for piece-work the employer and the employee may agree to a basic rate to be used in computing overtime. The basic rate, however, must be authorized by the Wage Hour Administrator.

If employees are involved in two types of work paying two different rates of pay, the overtime problem is

equally as simple. An employee so employed is paid overtime pay figured at time and one-half the rate applicable to the particular job, during non-overtime hours.

The new regulations liberalize, somewhat, the exemptions from overtime pay where annual wage agreements exist. Under the old law the exemption from overtime payment was lost when an employee working under an annual wage agreement exceeded 2080 hours. The new law sets the maximum number of hours an employee may work at 2240 hours in a 52 week period. Employees are guaranteed at least 1840 hours work per year. Where these conditions are set, an employer has to pay overtime pay only after 12 hours a day or 56 hours per week, until 1840 hours have been worked. When the minimum guarantee of 1840 hours has been worked, the employer must pay time and one-half for all work performed in excess of 40 hours per week until 2080 hours have been worked. For all work performed in excess of 2080 hours, in the 52 week period, time and one-half must be paid.

Tentative Exemptions from Overtime Provisions of the FLSA

EXECUTIVE EMPLOYEE

Conditions for Exemptions:

Primary duty consists of the management of the enterprise or of a recognized department of it.

He regularly directs the work of two or more employees.

He has the authority to hire or fire other employees or to make recommendations on such questions or other changes in status that will be given particular weight.

He regularly exercises discretionary powers.

He does not devote more than 20 per cent of his hours worked to activities "not directly and closely related" to his executive functions; except in the case of an employee who is in sole charge of an independent establishment or a physically separated branch establishment, or is an owner of at least 20 per cent interest in the enterprise.

He is paid a salary of at least $55 per week exclusive of board, lodging or other facilities. $30 per week in Puerto Rico and the Virgin Islands.

All of the above provisions or:

He is paid not less than $100 weekly, exclusive of board, lodging or other facilities and his primary duty consists of the management of the enterprise, department or subdivision of it and customarily directs the work of two or more employees.

ADMINISTRATIVE EMPLOYEE

Conditions for Exemptions:

An employee is exempt if the following requirements are met (all of *A, B, D,* and *E* and one of the alternatives of *C*).

A. His primary duty consists of the performance of office or non-manual field work directly related to management policies or general business operations of his employer or his employer's customers.

B. He customarily exercises discretion and independent judgment.

C. 1. He regularly and directly assists a proprietor, or an employee employed in a bona fide executive or administrative capacity.

C. 2. He performs under only general supervision work along specialized or technical lines requiring special training, experience or knowledge.

C. 3. He executes under only general supervision special assignments and tasks.

D. He does not devote more than 20 per cent of his hours worked in the workweek to activities "not directly and closely related" to the performance of administrative work.

E. He is paid a salary of not less than $75 per week. $200 per month in Puerto Rico and the Virgin Islands,

or

he is paid a salary of not less than $100 per week exclusive of board, lodging or other facilities and his primary duty consists of the performance of office or non-manual field work directly related to management policies or general business operations of his employer or his employer's customers and include work requiring the exercise of discretion and independent judgment.

PROFESSIONAL EMPLOYEE

Conditions for Exemptions:

An employee is exempt if the following requirements are met (all of *B, C, D,* and *E* and one of the alternatives of *A*).

A. His primary duty consists of the performance of work:

1. Requiring knowledge of an advanced type in a field of science or learning customarily acquired by a prolonged course of specialized intellectual instruction.

2. Original and creative in character in a field of artistic endeavor, the result of which depends primarily upon the invention, imagination or talent of the employee.

B. His work requires the consistent exercise of discretion and judgment.

C. His work is predominantly intellectual and varied in character and the result cannot be standardized in relation to a given period of time.

D. He does not devote more than 20 per cent of his hours worked in the workweek to activities which are not a part of and necessarily incident to his professional work.

E. He is paid a salary of at least $75 per week. $200 per month in Puerto Rico and the Virgin Islands. Salary requirements do not apply to those engaged in the practice of law and medicine,

or

he is paid a salary of not less than $100 per week, exclusive of board, lodging or other facilities, and his primary duty consists of the performance of work requiring knowledge of an advanced type in a field of science or learning including consistent exercise of discretion and judgment or in a field of artistic endeavor.

Premium and Holiday Pay Practices

The United States Department of Labor's Bureau of Labor Statistics has issued figures relative to the premium pay and holiday practices of 14 gas and electric companies, embracing 44,000 employees. The collective bargaining agreements involved were negotiated for the 1948-1949 period.

Of the 14 utilities surveyed, one company having 1500 employees paid time and one-half for work performed on Saturdays, while six companies, with a total of 19,500 workers paid time and one-half for work performed on Sundays. Three utilities, with 6,500 employees, specified that a minimum work requirement be accomplished before an employee was eligible for premium pay for work performed on Sunday, and two companies, with a total of 2,000 workers, paid double time for work done on Sundays.

Eight of the 14 utilities made contract provisions for work performed on the sixth or seventh day of the scheduled workweek, two providing for time and one-half for work on the sixth day of the workweek, one requiring certain minimum work requirements be fulfilled before employees became eligible for time and one-half pay. For work performed on the seventh day of the scheduled workweek, one company, having less than 500 employees, paid time and one-half and two companies, with 5500 employees, paid double time.

In the matter of holidays, 11 utilities paid for all holidays mentioned in their various contracts, while three companies recognized holidays but did not pay employees for them. Seven to eight holidays were the average number observed in the contracts surveyed.

Sensible Regulation Does Not Destroy Progress and Opportunity

by Benjamin F. Feinberg

Chairman, Public Service Commission of the State of New York

Hon. B. F. Feinberg

THE Public Service Commission of the State of New York is charged with the duty, under the Public Service law, of administering the provisions of the statute fairly in the interests of investors of the bus companies and of the millions of people who depend upon them for service.

I believe that the problems that arise can be studied with a better opportunity to arrive at answers if the commission and the industry work together.

Most regulated utilities operate under a public franchise which, to all intents and purposes, establishes a monopoly. In most instances, the operator is granted an exclusive or competition-free authority to supply his type of service in a given locality. This principle of monopoly or limited monopoly in public utility operation is, of course, economically sound in that it avoids wasteful and unnecessary duplication of facilities which may result in higher consumer cost.

Of course, there is a limited amount of competition in many utilities as between the use of gas in preference to electricity for cooking, or between either gas or electricity and coal or oil for space heating. But such competition is, in the greater part, general and between several kinds rather than identical types of service.

Public utilities commissions were developed by law as representatives of the public—to protect the public's interest against unlawful acts of monopolies where such acts may result in detriment, preference or disadvantage in one way or another to the public. But today we are living in a competitive and sometimes, I think, a somewhat chaotic world. This brings into focus another facet of regulation—that is, *the duty of the regulatory body to keep a utility solvent, fit and able to render its service.* This is generally resolved into rate cases—or a rate of return on investment and its related archaic word "dividends"; in other cases it involves service.

It is not my purpose to enter into a technical discussion of very complex regulatory problems. To a degree, other utilities subject to regulation by the Public Service Commission meet problems of competition from similar industries, and for that reason regulation becomes relatively simple. If inadequacy of service is claimed by the public, there are usually fixed and narrow geographical limits within which an investigation of such charges can be made easily. If a utility requires increased rates in order to earn a fair return, or to attract capital, the effect of a change in rate structure can sometimes be predicted with reasonable accuracy.

The characteristics of the motor bus industry poses a difficulty in public regulation which requires a flexible approach to the problems of the industry at varying levels because of the differences between small and large operators. These problems are not always the exclusive property of the bus industry. We have a more or less related set of problems affecting all of the utilities.

In rate cases the commission fully realizes that the need for relief is often urgent if not a downright emergency, and in keeping with this realization, I want to assure you that the commission is now taking and will continue to employ all means to expedite the movement of formal cases within the limits of our duty and legal requirements.

Let me give you a few statistics concerning the 1948 activities of the New York Public Service Commission.

At the end of 1948 we had a total of 3,188 utilities of all types under regulation. In addition to the regular routine matters requiring the commission's attention, there were 1,557 formal cases, of which 265 were initiated on motion of the commission. All of these cases required hearings, reports and decisions by the commission. In many cases, more than one

(Continued on page 46)

Editor's Note

We are pleased to give readers of AMERICAN GAS JOURNAL the first formal remarks of Hon. Benjamin F. Feinberg, who only recently was appointed chairman of the Public Service Commission of the State of New York.

In this connection we would like to recall a statement made by our financial editor, John F. Falvey, in the August issue of the JOURNAL. At that time he wrote: "It seems safe to say that . . . the New York utilities will be dealing with a far more realistic PSC than heretofore . . . the New York commission has now started an indicated 'live and let live' policy."

While in this particular piece, Mr. Feinberg has transportation in mind specifically, it is quite evident that his viewpoint and his philosophy apply to all companies coming under public service law.

Former Senator Feinberg comes to his new post after a commendable career in the state legislature for 17 years.

From an address before the New York State Motor Bus Association, New York, N. Y., November 1949.

Employee Pensions Have Proper Place in Present Day Economy

by Henry S. Beers

Vice-president, Aetna Life Insurance Co., Hartford, Conn.

WHAT is the proper 1949 attitude toward the retirement of persons who are approaching or have reached superannuation? Should your companies have a generous attitude toward pensions, a niggardly attitude, or a hard-boiled attitude?

To discuss these possibilities in reverse order, a hard-boiled attitude is presumably impossible in the public utility field for public relations reasons, if for no other. By a "hard-boiled" attitude, I mean reduced remuneration when old-age reduces a man's efficiency and usefulness, with no pension when he finally has to quit coming to work.

You cannot afford to dump on the public, who constitute your customers and who elect the legislators who vote on matters of taxation and regulation, your superannuated employees without making sure that they are supplied with some means of support on a reasonably adequate though modest level. You must, at all costs, keep them from being a burden on public or private charity, or even on state old-age assistance plans which the federal government helps the states pay for.

A niggardly attitude toward retirement will usually defeat its own end. By a niggardly attitude, I mean too small pensions, grudgingly granted. Instead of saving money through reducing pension costs, this attitude is apt to lead to costly deferments of retirement. The pension payroll is kept low, but only at the expense of excessive regular payroll per unit of work accomplished. Superannuated employees still coming to work pretend to be doing a full normal day's work; and their well-wishing supervisors and fellow-employees often join in a tacit conspiracy to shield them from retirement. Whether this occurs at low levels of the organization, where it is a mere drag on efficiency and profits, or at a high level, where it may be well-nigh disastrous, a niggardly attitude will seldom make money for stockholders.

On the other hand, a more generous retirement plan will always be criticized by some as a waste of stockholders' money. They will say that it is not the duty of the stockholders both to pay good wages and to support ex-employees in affluence.

Support in affluence, even the relative affluence that would come from being enabled to maintain one's pre-retirement scale of expenditure, cannot properly be asked either of stockholders or of their customers, assuming the cost will have to come out of either one or the other. But money will be made for the one, or money saved for the other, by the adoption of a retirement attitude that will accomplish the prompt retirement of superannuated personnel.

The scale of pensions must be large enough to prevent employees from fearing retirement as something almost worse than death, and large enough so that supervisors who insist on an employee's retirement at an appropriate time can feel that they are acting in the employee's best interest.

The principles I have enunciated may strike you as true enough, but pretty old stuff. Your companies have been guided by them for as long as you can remember. A generous attitude toward retirement has been evidenced, nearly everywhere in your industry, by your actual treatment of aging employees.

Tell the Employee

Where the mistake has been made—generally until the recent past and, in too many companies, still today—is in not evidencing this attitude by any formal assurance to the employees. This absence of a formal assurance to employees has repeatedly drained off much of the value to an employing company of its expenditure of money on pensions, or on salaries continued to less than fully productive old persons.

Pension costs are not merely a necessary evil to fend off bad public relations. They should not be a presently unproductive expenditure for the mere purpose of weeding out the aged inefficient without undue hardship to them. A retirement plan can be a potent positive factor in improving management-employee relationships: most employees nowadays recognize and appreciate a good retirement plan when they see one. An announced retirement plan can, in every case, work an enormous improvement in the morale and efficiency of the older employees: without an announced plan, the oldster doesn't know whether or not he can ask for retirement without ruining his chances for favorable treatment; he is apt to get the jitters from fear lest some little mistake lead to his discharge, or retirement on a very small allowance. With an announced plan he can prepare for the future.

Explanation Pays Off

A modest pension plan, fully explained to employees, is worth far more in improved morale and efficiency than much larger pensions awarded on retirement as a matter of grace without advance announcement.

To summarize, our 1949 attitude toward retirement calls for a reasonable pension plan, not so niggardly as to make employees fight retirement by every hook or crook, nor so liberal as to encourage employees to retire while they still have years of efficient service left in them; but most importantly, a retirement plan announced to the employees so that they may know what they can look forward too, and plan accordingly.

What is a sensible 1949 attitude toward the financing of pension costs?

Many times in the past—and at pres-

From a paper presented at the American Gas Association convention, Chicago, Ill., October, 1949.

ent, too, in many industries — the easiest way has seemed or seems to be to forget pension costs, and hope that you personally will have retired on favorable terms before a day of reckoning becomes inevitable. Maybe your company's pension payroll has been increasing only slowly; or, at any rate, maybe it isn't large yet, not very large; AND probably your company admits no legal liability to pension anybody, or even to continue the pensions it is paying now. Nevertheless, a company which defers the financing of its pensions until the respective employees have retired and their monthly payments have become payable, is always saddled with an unrecognized liability. Of course you can say that a corporation is perpetual, particularly a public utility corporation. Even so, it takes no more than a vague fundamental appreciation of accounting principles to see that pensioners and near-pensioners constitute a real liability, and that surplus is overstated if the liability is unrecognized.

A possible misstatement of surplus may be considered, by some, of theoretical rather than practical importance. More interesting may be the fact that when a portion of each year's receipts is not set aside to cover the estimated present value of that year's accrual of pension liabilities, the company's net income is overstated. Overstatement of income is undesirable for harsh practical reasons: it increases your income tax; it tends to make your prices appear too high when they are not. Ordinarily, a company would not permit its tax department to omit a substantial deduction in making up the company's income-tax return. Nor would it instruct those studying the relationship between its prices and its costs of operation to overlook an important item of cost. But that is just what many companies are doing, when they try to get along without a formal funded pension plan, qualified under section 165(a) of the federal internal revenue code.

It is not my purpose to discuss the relative advantages and disadvantages, to different types of companies of different types of pension plans, of pension trust funds and group annuity or insured retirement plans. Suffice it to say that both vehicles of pension financing have their adherents; both are doing fine jobs when wisely constructed and carefully administered; and, most importantly, the current outlook indicates plenty of future business for both.

The third phase of a wise 1949 pension attitude concerns the proper place in the pension picture of the old age benefits under the Social Security Act.

The proposed increase in benefits for lower-paid people is not running into a great deal of opposition: the minimum monthly benefit paid by the Social Security Act has been too small. On the other hand, there are very serious doubts as to whether the proposed increases in the allowances of the higher-paid employees are appropriate for a Social Security fund. One of the principles of social insurance is that a Social Security scheme must not attempt to provide benefits above a reasonable subsistence level. Attempts to go further are bound to run into costs that cannot be paid without dislocations that lower, rather than raise, the general standard of living.

The function of social insurance is to provide a floor of benefits on a subsistence level, and not to reward the more efficient or fortunate with the larger pensions that in many industries can be obtained through the joint or several endeavors of employers and employees.

Modern management is asking itself just what part the pension plan plays in maintaining an organization of happy and efficient workers.

AGA Issues Analysis of Rate Changes Made during Period of 1947-1948

GENERAL rate changes in the years 1947 and 1948 were effected by 134 gas utility companies, according to a report just completed by the Rate Committee of the American Gas Association. While the report does not purport to be a complete coverage of the industry with respect to gas rate changes, the committee under the chairmanship of Robb Quinby, The Brooklyn Union Gas Co., believes the companies accounting for the substantial rate changes reported comprise the greater percentage of the sales of gas and revenues therefrom in the entire gas industry.

Manufactured gas companies constituted the greatest majority of reporting companies and more than 100 manufactured and mixed gas companies found it necessary to apply for rate relief during the two year period. Rate increases were petitioned and received by all of these companies.

In the natural gas branch, while most of the companies had requested and were granted rate increases, there were several companies reporting rate decreases. The majority of the liquefied petroleum gas companies covered reported increases in rates.

Changes in fuel and labor costs were quoted in most instances as the underlying reason for changes in rates. This was particularly true in the manufactured gas branch where the overall earnings picture was most affected by rising costs. Changes in taxes necessitated requests for rate increases by some companies in both the manufactured and natural gas departments.

Review of Current Research Is Published for 1949

Over 4000 current college and university research projects in engineering subjects, representing expenditures of over $35,000,000, are listed by title in the 1949 *Review of Current Research*, published recently by the Engineering College Research Council of the American Society for Engineering Education.

Entries in the book from 82 educational institutions which hold membership in the Research Council describe the administrative policies for conducting engineering research and list the responsible personnel, research expenditures, short courses and conferences of special interest, and the titles of all engineering research studies currently active at each institution.

Copies of the book, paper bound and including more than 180 pages, are available ($1.75 postpaid) from the Engineering College Research Council. Address orders to F. M. Dawson, Chairman, in care of the College of Engineering, State University of Iowa, Iowa City.

Straight Natural Gas Operation Expands Washington System Capacity

MANUFACTURED gas companies anticipating the imminent delivery of natural gas at their city gates are confronted with many problems, one of the most immediately important being the effect that the new fuel may be expected to have on production and distribution facilities because of the expansion of the house heating load.

The manner which natural gas is proposed to be used by the distributing utilities will in most cases afford some indication of the rapidity with which the house heating may be expected to increase.

Obviously in those systems where outright conversion to straight natural gas is accomplished at the earliest possible moment, and where this conversion is accompanied by a reduction in the therm rate for gas sold, the effect will be the most immediate and the most pronounced. But even without rate reductions an immediate upsurge in house heating demand can reasonably be expected.

The growth of gas house heating has been held back in many areas only by the inability of existing gas plants to handle the increased production, and where this is the case, the assurance of an adequate supply of natural gas may spell the end of any restrictions that have been imposed.

When Restrictions Are Lifted

A most recent example of the spectacular response that the lifting of house heating restrictions may produce, is the case of the Michigan Consolidated Gas Company. On August 1 that company announced its readiness to connect new heating customers and in 4 months to December 1, it received 106,112 new applications, an increase of 97 per cent over the 109,522 space heating customers that were on the lines at the end of 1948. Of this number 75,000 are already connected. This response was not effected by any rate reduction, as the house heating schedule remained the same.

The Washington Gas Light Co., Washington, D. C., has enjoyed a more conservative expansion as the result of its natural gas program, but the experience of this company is valuable as a case study for several reasons: First, natural gas was introduced in the system in limited quantities as early as 1931, but for nearly 16 years it was utilized only to enrich carburetted water gas to a required 600 Btu standard. From the outset this company engaged in an active promotion of gas for house heating sales. As the population of Washington expanded in the years immediately prior to the war, the result of this promotional activity began to manifest itself in the form of increasing orders for house heating. By the end of 1941, just before space heating restrictions went into effect, 50 per cent of all the new homes constructed were gas heated.

Space Heating Climbs

Table I indicates the extent of the residential space heating sales buildup in comparison to the total sales for all classes of customers. It may be noted that while total sales for the period 1939-1948 increased 110 per cent, residential space heating sales climbed over 200 per cent. Of further significance is the fact that residential space heating contributed almost half of the overall increase in therm sales.

Space heating restrictions were imposed in Washington from February 1942 to August 1945, and were again in effect from March 1948 to February 1949. The year 1948 was the first complete year on straight natural gas.

Sales efforts have been concentrated to a large extent on new housing in recent years, and at present 95 per cent of all new residential construction in the company's service area uses gas for heating.

Space heating customers reached a saturation of 22.5 per cent of all residential meters in 1948, which was about double the 1939 saturation.

The rapid growth of the heating load and the location of the new demand, coming as it did from suburban areas remote from the existing gas plants, taxed both the production and distribution systems of the company, until by the end of 1946, management was faced with the choice of constructing new gas making facilities in locations away from the existing plants, or converting the system to straight natural gas.

As recently stated by Howard B. Noyes, vice-president of the Washington Gas Light Co. before the New Jersey Gas Association, the company was confronted with still another problem. Operating expenses, due to higher labor and raw material costs, were climbing faster than revenue. Gas rates had been maintained at substantially the 1939 level, but there was every prospect that substantial increases would be required to meet new conditions and to provide for necessary expansion of the facilities.

The peak day sendout per meter had also climbed, from 359 cu.ft. of 600 Btu gas per day in 1939 to 560 cu.ft in 1947. In 1948 the comparable figure would have been 670 feet had not the conversion to natural gas been completed. Table 2 shows that although the peak day sendout per meter, when measured in therms, doubled in the ten year period, the cubic foot per day send out actually shows a slight decrease. These large sales increases were accomplished with only an 11 per cent decrease in the annual load factor.

The Reasons Why

Inasmuch as the Washington Gas Light Co. serves an integrated urban area, its gas sales are predominantly residential and commercial in character. Industrial gas sales are insignificant. Chart I indicates company revenues by classes of service. This chart was reprinted from the company's 1948 annual report, which incidentally signalized the completion of its 100th year of operation.

Describing the factors leading up to the company's decision to convert to straight natural gas, Mr. Noyes said, "In 1946, prior to our changeover, our maximum daily output had been 100 million cu. ft. of 600 Btu gas. During this coming winter, [1949-50] our estimated maximum daily output, based on an average daily tempera-

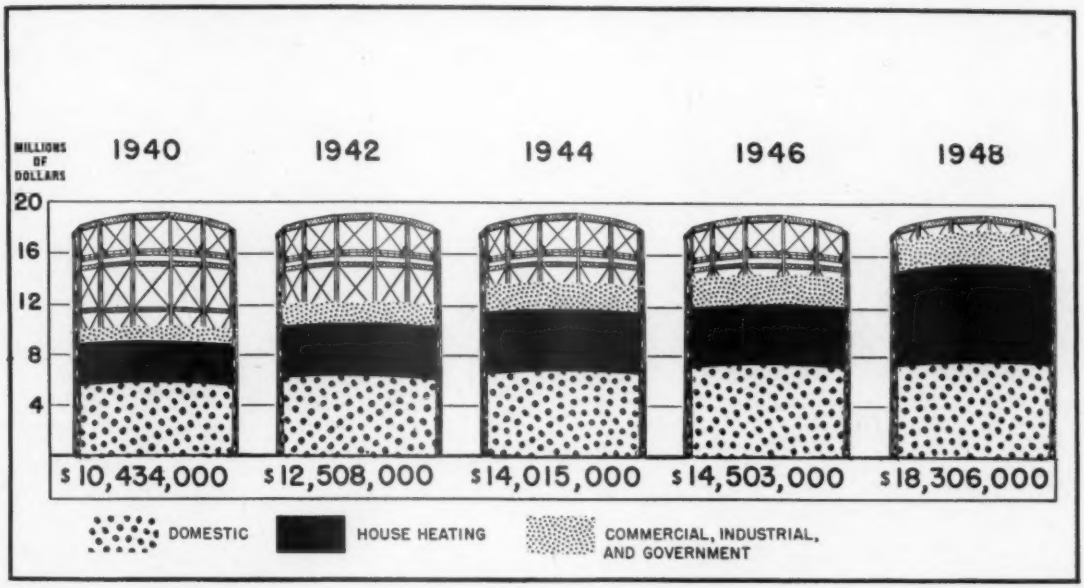

Chart 1

ture of five degrees, which is the design temperature for our system, is 133,000,000 cu. ft. of 1100 Btu gas. Manifestly this more than doubling of our maximum daily thermal gas output within a period of four years could only have been accomplished by the changeover to natural gas."

This changeover was begun late in the summer of 1946, and was completed by October 1947. One gas plant was completely dismantled and all of the salvagable equipment sold. Generating equipment, consisting of 14 water gas sets in the more modern of the company's two plants, was converted to the production of 1030 Btu oil gas. This equipment, now available for standby and peak shaving, is expected to be in operation only a short time during the year.

Two facts stand out in any survey of the changeover experience of the Washington Gas Light Co. The first is that in spite of rising operating costs, the rates per therm charged in 1948 were substantially the same as those for 1939. It is necessary to add in this connection, however, that as a result of four rounds of wage increases and the high construction costs of new facilities, the company was forced, in July of 1949, to apply to the Public Utilities Commission of the District of Columbia for a gas rate increase of approximately seven per cent. At this writing no decision has been rendered in the case.

A second advantageous aspect of the changeover was that annual revenue per meter was increased from $51.40 in 1939 to $62.82 in 1946, and $74.32 in 1948 without disproportionate capital expenditures. Of $9,839,000 spent for construction in the years 1947 and 1948, $7,687,000 was for distribution lines, service connections and meters.

Generalizing from his own experience and observations, Mr. Noyes told the New Jersey gas men:

"After undergoing a long period in the 1930's when gas sales were either static or in many instances decreasing and when in some circles a definite mood of pessimism prevailed, our industry during and after the war years found itself in a period of renaissance. For some time it has been riding the crest of an economic and competitive wave. Henceforth, natural gas may well be the answer to many of the problems which gas companies will encounter in maintaining their present economic stability and progress."

Table I—Washington Gas Light Company—Sales Data—1939-1948

Years	Total All Sales M-Therms	Peak Day Sendout Therms	Residential Space Heating Only Annual Sales M-Therms	Meters	Average Sales per Meter-Therms
1939 ...	72175	378042	18486	18954	975
40 ...	84402	464634	25036	22436	1116
41 ...	87924	481788	23976	26634	900
42 ...	101861	698214	28738	31302	918
43 ...	109421	629334	33785	32125	1052
44 ...	112682	575832	34253	32152	1065
45 ...	114077	647964	32861	32400	1014
46 ...	116263	600924	32490	34705	964
47 ...	132465	799675	43941	40568	1083
48 ...	150590	987669	56194	52170	1077
Per cent Increase 1948 over 1939 ...	110	161	203	175	

Table 2—Comparison of Peak Day and Annual Sendout for Years 1939 and 1948 Washington Gas Light Co. and Subsidiaries

SENDOUT AND LOAD FACTOR		1939	1948
Avg. Heating Value	(Btu. per Cu. Ft.)	604	1,138
Annual Sendout	(MCF)	12,704,200	14,109,000
Annual Sendout	(Therms)	76,733,700	160,559,900
Annual Sendout Per Meter	(MCF)	72.8	57.3
Annual Sendout Per Meter	(Therms)	439.7	651.9
Degree Day Deficiency		4,031	4,096
Peak Day Avg. Temp.	(°F.)	28°	12°
Peak Day Sendout	(MCF)	62,590	86,790
Peak Day Sendout	(Therms)	378,042	987,669
Annual Load Factor	(Avg. Day ÷ Peak Day)	55.6%	44.4%
Peak Day Sendout Per Meter	(Cu. Ft.)	359	354.
Peak Day Sendout Per Meter	(Therms)	2.17	4.03

Christmas Touch in England: **At the left toys for export are seen leaving the gas-fired radiant-heat drying furnace of the Crescent Toy Co., Tottenham. Representative samples of the toys are pictured above.**

Underground Coal Gasification Is to Stay 'Underground' for Time Being

UNDERGROUND gasification of coal still is only a gleam in the scientist's eye.

Progress is being made along this line, it is true. But even the most ardent exponents of the experiment describe it as just that, and one which will require years, and possibly many years, to perfect.

Manufactured gas companies to which such a development would be a boon meanwhile will be able to reduce costs and earn a fair return on their property investment only by awaiting introduction of natural gas into their areas or, as a substitute, by resorting to manufacture of high Btu gas from petroleum.

Gasification of coal in its earthly bed is being pursued for the second time at Gorgas, Alabama, in tests being made jointly by the United States Bureau of Mines and Alabama Power Co.

Purpose of this experiment is twofold: The aim of the company is to obtain low cost energy, and the Government is endeavoring to lay the groundwork for synthesis production of gasoline to provide against the day when crude oil reserves run out.

On the basis of estimates made two years ago, gas burned off from coal direct in its underground seam was expected to permit an average saving of $1.50 a ton when used as boiler fuel in a 200,000 kilowatt steam driven electric generating plant over a period of 20 years. The estimated savings should be substantially the same for manufactured gas companies.

Since this estimate was predicated on lower coal prices prevailing two years ago, the savings now could be considerably greater than previously anticipated. And additional economies could be realized, according to proponents of the process, if underground mining necessary thus far to get at the coal bed could be eliminated and if a recently developed formula for washing away the clay which lies below all coal seams proves feasible. This would permit forcing down the coal seam into the space occupied by the clay and thus allow steps to be taken to guard against roof trouble in the area above the portion of the coal seam being burned.

Gas with a heating content of 398 Btu has been seeping through the drainage holes bored in the portion of the 80 million to 100 million ton Gorgas coal seam dedicated to the underground gasification test.

But the gas actually obtained from the experiment in test withdrawals has been diluted with oxygen and has averaged a mere 99 and 100 Btus.

The first underground gasification test at Gorgas ran from January through March, 1947, and the present test has been under way since March of 1949, with the last three months' operation being continuous.

"We are making progress," said Dr. Milton H. Fies, manager of coal operations for Alabama Power Co., in a recent address before the New York Society of Security Analysts. "But we are under no illusions as to the difficulties involved," he added. Dr. Fies stated that he and the Government scientists are convinced of the feasibility of successfully burning the coal underground. Two further steps are necessary, one the actual development of synthesis gas and ultimately through catalytic processes the refinement of a gas containing from 900 to 1,000 Btu.

Dr. Fies stated that the Gorgas process has an efficiency ratio of about 70 per cent. As against this, he said, coal over a long period of years has aggregated only 50 per cent, 70 per cent to 75 per cent now is considered good and 90 per cent is deemed excellent.

If the experiment continues to show improvement along the line indicated so far, Alabama Power Co. in a short time proposes to build a pipe line through which to carry gas from the underground test for use under one of the 18 boilers in its generating station one-half mile away.

What the results of such a test may be is conjectural at the moment, as is the likelihood of early and substantial increase in the heating content of the gas obtained from the underground test.

Leaders in the gas industry are watching the results of the experiment but, to their way of thinking, the proper place for underground gasification is for standby purposes, so long as natural gas is available or is likely to be available in any given area.

Wallgren Chosen Vice-Chairman of FPC for 1950

Commissioner Mon C. Wallgren, of Washington, has been unanimously elected vice-chairman of the Federal Power Commission to serve during the calendar year 1950. He will succeed Commissioner Claude L. Draper who served in 1949.

Commissioner Wallgren has been a member of the Commission since November 2. Prior to that he was governor of the State of Washington and served as U. S. Senator and Representative from that State. He was a member of the U. S. House of Representatives from 1933 until 1940, when he resigned to take his seat in the Senate. He resigned from the Senate in January 1945 to become governor of Washington.

Higher Btu Gas from Existing Plants Shows Substantial Advantages

Part 2—From 660 Btu to 951 Btu

by Hall M. Henry

Vice-president, Negea Service Corp., Cambridge, Mass.

WE have seen what 660 Btu gas can accomplish, and since these companies now find their capacities again inadequate, let us see what lies ahead should they go to 951 Btu gas.

G. G. Howie, vice-president and general manager of the Cambridge Gas Light Co., as well as the writer, have already given much of the detail in regard to the operating and economic results of using high Btu oil gas at Cambridge, Mass. While this is so, it was thought advisable, in this broader treatment of the economic results of elevating gas heating values, to include certain pertinent data previously revealed and some only now available. By including the results on 951 Btu gas a comparison can be drawn as to the relative benefits of 660 and 951 Btu gases.

The reasons for Cambridge adopting a 951 Btu gas were briefly as follows:

(a) The connected loads exceeded the available plant and distribution capacity.

(b) It was impossible in time available to secure and have installed in time additional carburetted water gas capacity.

(c) An economic study at the time, based on available data, showed that a 951 Btu gas could be produced at no more than 1c per Mcf above holder cost of carburetted water gas.

(d) The changes to plant could be made in time to meet the expected demands.

(e) The plant costs would be negligible.

(f) Customers' appliances could in general be converted satisfactorily.

(g) The expense of appliance conversion, while a sizable item, would be amortized over a period of years and also partly offset by Federal taxes.

(h) The plant and appliance changes are of the same general type as would be required for natural gas which is expected in New England at some future date.

Faced with this analysis the company which had been considering the advantages of high Btu gas over a period of years decided to convert to 951 Btu gas.

Company on 951 for Two Years

The Cambridge company has now operated on 951 Btu gas since August 1947 or slightly more than two years. During this period it has had an opportunity to appraise the impact on earnings and operating results of sharply rising fuel prices; of deterioration in oil qualities; and lately of falling fuel prices and now again rising fuel prices. There has also been the opportunity to compare Cambridge results with others. The following are some of the highlights of this two years' experience.

The company installed the twin generator oil gas process manufactured by The Gas Machinery Co. of Cleveland, Ohio. The changes required were relatively simple and need not be elaborated upon here as this process has been fully described.

The cost of the plant changes amounted to some $110,000 gross, and after retirements were less than $40,000. In addition, the company installed an LP gas-air plant to be used as standby. The total net additions (including an oil scrubber) amounted to approximately $130,000, bringing the net production plant investment to $2,223,123.

Had it been possible to install in time additional carburetted water gas equipment, the estimated cost for new plant to provide equivalent capacity was estimated at $3,000,000—or, with the existing investment, the net plant would have been $5,193,123.

Future Plans and Projects

The Cambridge company is now completing the installation of equipment to permit the use of heavy oil. These changes consisted of converting one of the three existing twin generator sets to a Hall heavy oil 4-shell set. This was accomplished by relocating what was the original generator of the water gas set along side the old carburettor and installing a new superheater shell along side of the old superheater. The estimated costs are $80,000.

In addition, the company has installed a new 2-shell set which incorporates all of the features of the Hall set but accomplishes this in two shells instead of four. The estimated cost is approximately $180,000.

The existing oil gas building is being extended 40 feet to house the new 2-shell set and the new parts of the 4-shell set. This is estimated at $50,000.

A blower and miscellaneous items bring the total to $325,000.

With these changes the new net production plant investment will be $2,548,120. There will be certain retirements to be deducted from these figures when the new changes are completed which will represent those plant changes made to use light oil and which are no longer needed. These retirements will not make a material difference in the conclusions.

Comparison of Fixed Charges

Using the net plant investments for the several methods of producing gas we can calculate the effect of fixed charges on the cost of gas. For our purposes the fixed charges have been computed at 13 per cent and are based on a recent annual production figure of 2,608,000 Mcf (528 Btu basis). The comparative fixed charges are given in the table at the top of page 20.

Production Costs

The table on comparison of production costs was prepared by Mr. Howie, but adjusted by the writer to reflect current fuel prices. All but the heavy oil high Btu oil gas are based

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A paper presented at the American Gas Association convention, Chicago, Ill., October 1949.

Part 1 appeared in the November Journal.

on actual company results. The heavy oil high Btu figures are based on the Baltimore tests using the Hall process.

The tabulation of production costs (given in adjoining column) clearly shows the relative FOTS labor and maintenance costs and holder costs for producing gas under the three conditions outlined. These relative costs will vary depending on the prices of the various fuels used and the amount received for tar and light oils recovered. For instance, in May 1947 (when the decision was made to go to high Btu oil gas using light gas oil) the comparative prices for heavy oil (special premium type) the company was then using was 5.62 cents vs. 7.02 cents for light gas oil or a difference of only 1.4 cents per gallon. At today's prices there is a 3.0 cent difference and just prior to the recent jump in heavy oil the difference was 3.5 cents per gallon. Were 1947 relative oil prices available today then the holder cost of high Btu oil gas (using light oil) would be 5.64 cents more than carburetted water gas instead of 10.86 as of today. On the other hand, the holder cost of oil gas using heavy oil at 1947 prices is only 2.69 cents less than carburetted water gas, whereas at today's prices there is 7.74 cent saving in favor of high Btu gas using heavy oil. The following table will show the relative costs of oil gas using light oil and heavy oil vs. heavy oil carburetted water gas at the oil prices shown. Other fuel and labor costs assumed to remain constant:

Table of Comparative Fixed Charges

	Carburetted Water Gas Actual plus Estimated	Oil Gas Light Oil Actual	Oil Gas Heavy Oil Actual plus Estimated
Net Plant Investment	$5,193,123	$2,223,123	$2,548,120
Fixed Charges @ 13%	675,106	289,000	331,256
Fixed Charges per Mcf	26c	11c	12.7c

Table of Comparative Production Costs

	September 1949 Prices Carburetted Water Gas	Light Oil	Oil Gas Heavy Oil
Operating Results (528 Equiv.)			
Oil/Mcf/gals	3.62	5.70	6.45
Coke/lbs/or tar gal/Mcf	19.06	.74	—
Boiler fuel/lbs/Mcf	14.5	8.5	8.5
Tar credit/gal/Mcf	.8690	1.14	1.27
Light oil credit/gal/Mcf	.0425	0.141	.19
Unit Fuel Prices			
Oil cents/gal	5.0c	8.0c	5.0c
Coke $/ton	$16.00	—	—
Boiler fuel (Coke Breeze)	$6.57	$6.57	$6.57
Tar—cents/gal.	5.5c	5.5c	5.5c
Lt. oil recovered	8.0c	8.0c	8.0c
FOTS cents/Mcf			
Oil	18.10c	45.60c	32.29c
Coke or Tar	15.25	4.07	—
Boiler Fuel	4.77	2.80	2.80
Total	38.12	52.47	35.09
Less tar	4.79	6.27	6.99
Balance	33.33c	46.26c	28.10c
Less Lt. Oil	.34	1.13	1.57
Total FOTS	32.99c	45.13c	26.53c
Labor & Maintenance costs/Mcf			
Labor	6.78c	5.50c	5.50c
Miscellaneous Works Expense	.95	.95	.95
Maintenance	3.28	3.28	3.28
Total Other	11.01c	9.73c	9.73c
Holder Costs	44.00c	54.86c	36.26c

	Carburetted Water Gas Using Actual Data	Oil Gas Light Oil Using Actual Operating Data	Oil Gas Heavy Oil Estimated on Balto. Res.
1947 Fuel Prices			
Oil Prices	5.62	7.02	5.62
Holder Costs	43.78	49.42	41.09
1948 Fuel Prices			
Oil Prices	8.0	10.34	8.0
Holder Costs	54.10	67.35	53.20
1949 Fuel Prices			
Oil Prices	5.0	8.0	5.0
Holder Costs	44.00	54.86	36.26

Holder Costs Plus Fixed Charges

The holder cost represents only the production costs; the true relative price must include the fixed charges on the different investments required to produce gas with the various fuels. The following table clearly shows the impact of the fixed charges (previously calculated when added to the holder costs:

	Total Costs of Gas/Mcf Carburetted Water Gas	Oil Gas Light Oil	Oil Gas Heavy Oil
1947 Prices	69.78c	60.42c	53.57c
1948 Prices	80.10	78.35	65.90
1949 Prices	70.00	65.86	48.96

It is interesting to point out here that an independent firm of engineers hired by the Massachusetts Department of Public Utilities to aid it in an investigation of the company's rates testified that in their opinion the company had saved from four to seven cents per Mcf by going to high Btu oil gas instead of continuing with carburetted water gas. The figures show that at 1947 prices on the light oil which the company was using there was a saving of 9.36 cents per Mcf. At today's relative prices the savings are 4.14 cents on light oil and are expected to reach 21.04 cents per Mcf using heavy oil.

Distribution Investment

As pointed out previously, the company was also short of distribution capacity and would have had to enlarge its pumping equipment, mains, services, etc. It was estimated that a minimum of $750,000 would have been required. At 13 per cent this meant an additional expense per Mcf of 3.7 cents that would have been imposed on the company had it continued with 528 Btu gas. It is difficult to estimate the additional capital savings which have been realized because services and meters do not have to be replaced whenever added loads are taken on, but these will be substantial as the company continues to expand its kitchen and house heating loads.

Customer Changeover Expense

The use of 951 Btu gas resulted in an expenditure of $580,000 which is

being amortized over a 14 year period. The first year the company wrote off 40 per cent of the changeover expense (equal to Federal income tax on the total changeover expense). The annual write-off is equal to about 1.25 cents per Mcf and is negligible when compared with the 15 to 21 cents per Mcf that would have been assessed annually against the gas sales had the company been required to make capital expenditure projected to enable it to continue to use carburetted water gas instead of oil gas using heavy oil.

Other Items of Consideration (Unaccounted-for Gas)

One added expense that must be assessed against the use of high Btu gas is the larger "unaccounted-for" gas in therms. If we take the increase in "unaccounted-for" as being proportional to the rise in heating value, then Cambridge should have shown an 80 per cent increase in its "unaccounted-for" gas. The actual Mcf "unaccounted-for" figures on a 528 Btu equivalent basis for the two years prior to the changeover and two years since are shown in the following table. We have shown two other companies in our system so that allowances might be made by any one interested for weather conditions.

Unaccounted-for Gas—All on 528 Btu Equiv.

Before Change	Cambridge	Company A	Company B
1946 (12 Mos.)	112,151	86,159	180,769
1947 (12 Mos.)	120,469	84,902	279,695
After Change			
1948 (12 Mos. July)	178,169	98,189	266,529
1949 (12 Mos. July)	116,675	89,694	369,533

If the "unaccounted-for" gas were assumed to have been increased in proportion to the increase in heating value then the extra cost would have amounted to approximately one cent per Mcf.

Servicing

Another question that probably arises is how has the increase in heating value affected the servicing costs. Based on the reported service calls (and these include the turn-on and turn-off of heating equipment) and the number of heating customers has risen by 54 per cent since the changeover, the calls are less today than preconversion. We cannot find any basis for thinking the service is greater with an increase in heating value of the gas.

Impact of High Btu Oil Gas on Financial People

It has been our good fortune (and I use the words good fortune advisedly) to have undertaken a substantial refinancing program during the past three years. At the start of this program our financial people ran into a rather definite aversion to our securities *due to the high proportion of gas revenues*, which were one-third of the total. This aversion was so serious that we delayed launching our financing program by six months.

In the meantime we had an opportunity to tell the financial analysts about the new development in gas and what AGA was doing in research and more specifically what could be done and what we proposed to do with high Btu oil gas. Needless to say, our new issue was overwhelmingly subscribed—so much so that it was the talk of the financial world at the time. We were later told by some of the financial people that instead of our high proportion of gas being a millstone around our financial neck, it turned out to be the extra incentive that made our stock attractive.

Recently we were told by several financial analysts that they knew of no industry outside of the manufactured gas industry that had a solution for its capital needs over the next five years and could look forward to lower production costs. This speaks volumes for the AGA gas production research for they were talking about the impact of high Btu oil gas on capital needs and operating costs using the heavy oil high Btu gas process. From our viewpoint we wonder how we would successfully meet the growing demands for gas were it not for the economic impact of high Btu oil gas with or without heavy oil (but more specifically with heavy oil) on our industry.

Balance to Surplus Real Answer

When all is said and done, the "balance to surplus" line on the earnings statement tells the real story. The Cambridge Gas Light Co. is now earning a satisfactory rate of return. Furthermore, it is expected (and the rates have been prepared for filing) to reduce the rates to Cambridge consumers by about 10 per cent shortly after the new heavy oil gas sets are in operation. We believe these two facts speak volumes for the success of the high Btu oil gas operations.

Conclusions

In conclusion, we can make the following observations, based on our experiences with elevating the heating value of gas to 660 and to 951 Btu:

On 660 Btu Gas

(1) A company need not experience any serious difficulty in raising the heating value to 660 Btu.

(2) All existing appliances (with exception of gas refrigerators) now properly adjusted will operate satisfactorily on 660 Btu gas—those not properly adjusted can be adjusted for 660.

(3) The gas refrigerators can be preadjusted so they will operate on either 528 or 660.

(4) The cost of customer changes will probably run between $1.25 to $1.50 per meter.

(5) The amount of the holder cost saving will depend on local conditions. For the companies listed the savings varied from two to four cents per Mcf.

(6) No capital expenditure is required.

(7) Both plant and distribution capacities will be increased 25 per cent.

(8) The customer reaction is good.

On 951 Btu Gas

(1) Most of the existing appliances can be modified to perform satisfactorily on the higher Btu gas.

(2) A few burners will need to be replaced.

(3) The customer cost should not exceed $12.00 and we believe it should be under $10.00 per customer.

(4) The plant investment costs will depend on existing conditions and whether the two shell or four shell heavy oil operation is installed. In any event it probably will not increase plant investment by 15 per cent.

(5) A production saving of from 15 to 20 cents per Mcf (including fixed charges) might well be realized.

(6) The plant and distribution system capacities will be increased by 70 per cent to 80 per cent.

(7) The plant changes will be useful if and when natural gas arrives.

(8) The customer appliance changes are the same general type that will be required for natural gas. Thus it is expected that most of the appliances will need no further adjustment. All new appliances are natural gas appliances or mixed gas appliances.

(9) Even if natural gas does not arrive, the company that installs oil gas is expanding its operations in the most economical manner.

Do you know of any industry that can increase its plant and distribution capacity some 80 per cent or more, through adding less than 10 per cent to its total investment, and at the same time reduce its production cost by 20 to 30 per cent? This is what manufactured gas companies can do through the installation of the Hall high Btu oil gas process and by distributing a high Btu gas!

Invention Covers Control for Gas Supply for Gas House Heating

by Frank O. Dunning
Inventor

THIS invention relates to improvements in fluid consumption regulators and is particularly developed for use in regulating the gas supplies to heating furnace equipment.

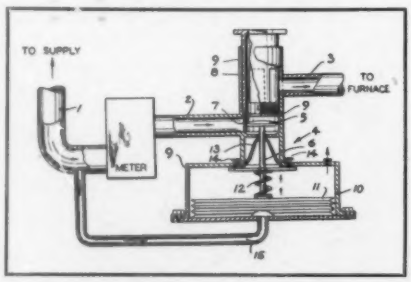
Fluctuations in pressure in a gas burning device have a considerable affect on the efficiency of the device, and in the past it has been customary with furnaces to use what is known as a regulator valve in the supply line just ahead of the furnace. The intended purpose is to maintain the supply in the feed line to the consumption device substantially constant so that the device can be adjusted for best performance.

The prime objective of my invention is to provide an improved regulator valve which is simple and economical to construct, does not require the use of parts machined to excessively close tolerances, and which is easily and simply adjustable manually to optimum operating conditions, and which will thereafter operate automatically to maintain the desired operating conditions and in which all desired adjustments may be made entirely from the outside while the system is in operation.

My invention both as to its fundamental principles and as to its particular embodiments, will best be understood by reference to the accompanying drawing which is a diagrammatic view of a system in accordance with my invention.

Referring to the drawing, 1 represents the intake from the main through the meter through 2 and 3 to the mixing chamber of the burner. In this conduit at 4 I interpose the control valve which consists of the valve head 5, connected by a stem 6. In closed position head 5 engaging valve seat 7 in the end of sleeve section 8. Section 8 is adjustable by screwing up or down in the housing 9 to adjust position of valve seat, 7. Attached to the housing, 9, is an enlarged section as at 10, within which is provided an expandable and contractable gas tight chamber, 11, in the form of a bellows or other suitable contrivance. The stem, 6, is operatively connected to the movable face of the bellows and in such manner that the valve head moves with bellows face as the bellows expands or contracts.

To provide a force resiliently restraining expansion of the bellows I employ a spring, 12, lowest end of which bears on the face of the bellows, 11, upper end of which bears against 13, the position of which may be adjusted by screw, 14, adjustable from the outside and by rotation the tension of spring, 12, may be increased



Drawing of the invention.

or decreased as desired. A conduit or static line, 15, is connected through an opening to the interior of the bellows, 11, the other end being connected to a point in the gas line ahead of zone of turbulence around and about the valve.

In operation of this system, the gas is admitted to the static line, 15, to the interior of the bellows. With this system in static equilibrium the pressure within the bellows will equal the pressure in the supply pipe, 1, and the valve will be adjusted by adjustment of the seat and/or the spring, 12, to the desired rate of discharge to the furnace.

Southern California Asks For Rate Relief

Ability of the Southern California Gas Co. to attract capital needed for expansion will be curtailed, stated Harry L. Masser, executive vice-president, unless rate relief on "an interim basis" is forthcoming.

That was the crux of the utility's petition for rate revisions placed before the California Public Utilities Commission at hearings which opened in Los Angeles on December 5.

Permanent rate revisions asked by the company would boost annual gross revenues by $16,700,000, costing the 1,100,000 consumers an average of $1.26 more for gas service each month. While earnings through October 31, 1949 were 4.74 per cent, it was pointed out in testimony that over 80 per cent of revenues fell in the four months of last year's abnormally cold winter.

Four elements have been responsible for the lowered earnings which have led to the petition for revised rate schedules: (1) increased cost of connecting and supplying new customers; (2) lower industrial revenues; (3) higher cost of gas purchased; (4) increased labor costs.

Voluntary Protection Plans for Workers Better than Government Systems

VOLUNTARY industrial plans for health and disability insurance, which allow workers to select the type of protection they need, provide advantages not possible under any governmental system of health insurance, A. D. Marshall, assistant secretary of the General Electric Company, said recently in Boston.

Citing General Electric's almost 50 years' experience with employee benefit plans which now cover more than 155,000 people, Marshall stated that voluntary benefit plans provide a flexibility of operation which could not be obtained under a system of compulsory insurance.

"Employees have quite different ideas of the types and amounts of coverage they want in different states, different cities, and even in the same city," he said. "The amount of hospital benefits will vary with hospitalization costs in different localities."

Pointing out that more than 37,000 General Electric employees who are eligible for coverage under the company's mutual benefit plans have elected not to join such plans, Marshall asked if there should not be "a place in our free economy for the employer and employee who want to agree that the employee will take home his total weekly wage and make provisions in whatever way he wishes against the hazards of illness.

"If the spread of voluntary disability insurance is an argument for compulsory insurance legislation, then why not compulsory life insurance, since millions of wage earners are now covered under voluntary plans?"

Kilns Adapted to Use Natural Gas Produce Better Bricks

by O. O. Todd

Manager of Industrial Sales, The Manufacturers Light and Heat Co., Pittsburgh

MORE than 200 coal-fired, down-draft, beehive kilns are located and adjacent to the Ohio River Valley where natural gas service is supplied by companies of the Pittsburgh Group of The Columbia Gas System, Inc.

These coal-fired kilns presented a challenge to gas company industrial engineers. Their smoke and ashes spilling out daily were a constant reminder of the questions in our minds —"Could natural gas be used in these kilns—and would natural gas help produce a better brick?"

Therefore we decided to dig into the whole related problem of fuel and production. By now we have secured promising results. There is every indication of natural gas displacing coal in many of these kilns, with the resultant new industrial gas load for the gas companies.

Before we went too deeply into the subject of burners, inputs and firing rates, we endeavored to analyze the whole subject of kiln firing. Here are the major points:

1. Combustion of natural gas differs considerably from combustion of coal. Gas must be burned under different draft conditions.

2. Natural gas will cost more than coal. However, the cost differential must be offset with savings in labor, with lower maintenance costs, greater convenience, the value of an improved product, and numerous other potential benefits.

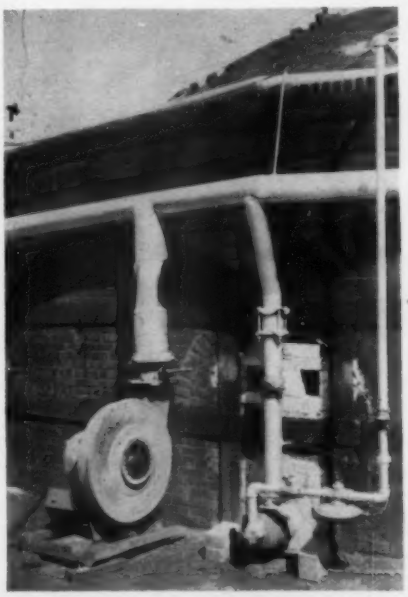
3. There must be a firing system of considerable simplicity that requires no special personnel training.

4. The costs of natural gas burners, labor, and materials for installation must be reasonable.

5. Gas burner operation must be stable and safe, with no danger of flame blowing out.

6. The burning operation must be efficient, to insure good production at reasonable cost.

Top: The type of brick kiln converted to use natural gas is standard beehive, down-draft, with 32-ft. inside diameter and ten firing mouths. Below is shown the completed burner installation.



Left: One kiln was equipped with ten luminous flame burners. Blower delivers air under pressure to each of the firing mouths.

The Summitville Face Brick Co., Summitville, Ohio, produces a tonnage of brick that is high in comparison to the dollar volume of production. They aided us in setting up an experimental installation of natural gas burners in one of their kilns. We used a 4-in. high-pressure, inspirator type of mixer with a flame-retention nozzle firing through a tuyere block. This arrangement is efficient and simple in operation, trouble-free, and economically priced.

The single hand control which reduces firing labor to a minimum at the brick kiln.

The tuyere block and burner nozzle are mounted at a 45-degree angle. This directs the gas flame toward the crown of the kiln.

The nozzle and block were placed so the flame passed directly into the kiln interior without impinging on the firing-mouth arch or the bag wall. This placement moved the heat out of the firing mouth and lowered bag-wall and firing-arch temperatures. It reduced kiln maintenance to a minimum.

At the same time, we created a high turbulence of atmosphere in the kiln crown. Here hot gasses tend to stratify. We placed almost all the heat in our gas into the kiln proper. This made for efficiency, as radiant heat losses from the firing mouths are considerably reduced.

One burner was placed in each firing mouth, with an individual control valve that could be used if needed. The 10 burners were connected to a three in. circular pipe manifold around the kiln, with identical piping for each burner.

The three in. manifold was fed

(Continued on page 40)

Income from Gas Stocks Is of Help To Educational Institution

by John F. Falvey

NATURAL gas industry common stocks now are going to college. They are not, of course, in the ordinary sense of matriculation. Rather, they are being added to the investment portfolios to provide the income so sorely needed to finance the country's institutions of higher learning.

One of the leading exponents of the trend is 313-year-old Harvard University.

The report of the treasurer of the Harvard endowment fund discloses that at June 30, 1949, the list of investments contained $3,447,223 purchase cost of natural gas industry common stocks. This represented a gain of 143 per cent over the $1,417,528 book value of such securities carried in the fund a year earlier.

The advantageous level at which these natural gas stocks were bought is shown in the fact that at market prices prevailing on the day this article was written they had a value of $4,235,003, or an appreciation of 22.9 per cent over the purchase cost.

Equally as significant—the $230,615 annual dividends on them afford the liberal yield of 6.69 per cent.

This is a full point above the 5.69 per cent yield obtained on the natural gas stocks held in the portfolio at the end of June 1948. What is more, the present rate of return is only slightly below the 6.87 per cent provided by the entire common stock segment of the portfolio, a small concession considering the greater degree of risk involved in the average industrial company common stock.

This month Financial Editor John F. Falvey touches on a subject which is troubling many thoughtful Americans — namely, the financing of privately endowed educational institutions.

This liberal income was obtained during a period when the natural gas company stocks held increased in value 50 per cent more than the 14.26 per cent shown by all of the common stocks in the fund.

Composition of the natural gas common stocks held in the Harvard endowment fund at June 30, 1949, is shown in the table.

In addition to sharply increasing its direct investment in natural gas company common stocks, the Harvard endowment fund has increased its indirect investment in the industry by adding to its already large holdings of oil companies which have substantial natural gas holdings.

Noteworthy among these are Phillips Petroleum Co. in which a $720,000 investment was held at last report, and The Texas Co. in which the interest amounts to nearly $1,168,000.

Significant, too, is the fact that natural gas common stocks held in the fund now are segregated under their own heading, whereas previously they were included under public utility common stocks as a group.

An interesting aspect of the fund is that since October 1948, it has been operated under the direct supervision of Paul C. Cabot, President of State Street Investment Corp. of Boston, who was elected treasurer of Harvard University at that time.

Assisting Mr. Cabot in the supervision of the Harvard portfolio is the experienced investment management group comprising the State Street organization.

This is believed to be the first instance of a college endowment fund being administered by an investment trust official.

Gas Stocks Held by Harvard Endowment Fund

Number of Shares	Company	Value at Nov. 28, 1949	Cost	Annual Dividend Income
15,006	Consolidated Natural Gas Co.	$603,991	$484,003	$30,012
30,846	*Indiana Gas & Water Co., Inc.	578,362	440,401	37,015
37,500	*Mississippi River Fuel Corp.	1,303,125	1,046,875	67,500
5,000	Pacific Lighting Corp.	253,750	229,667	15,000
5,000	†Peoples Gas Light & Coke Co.	605,000	397,616	30,000
420	*Tennessee Gas Transmission Co.	11,025	9,870	588
40,000	‡United Gas Corp.	710,000	633,381	40,000
7,000	Washington Gas Light Co.	169,750	205,410	10,500
		$4,235,003	$3,447,223	$230,615

*Bought in year ended June 30, 1949.
†3,000 shares held at June 30, 1948.
‡15,000 shares held at June 30, 1948.

Meeting Customers' Demands And Improvement in Earnings

Income available on natural gas industry common stocks continues to decline as indicated in the comments preceding the yield table on page 25.

But for "yield pinching" the shares of American Natural Gas Co. are in a class by themselves. Income of little more than 3.9 per cent is afforded from the $1.20 per share annual dividend on the basis of market quotations prevailing when this article was written.

This reflects in some part the forthcoming issuance of new stock at a discount to present stockholders through rights, but the real reason lies in the very strong current position and favorable prospects for the company, which only a few weeks ago put in operation its big new Texas to Michigan and Wisconsin natural gas pipe line.

(Continued on page 26)

Index of Yields : Selected Utilities Stocks

THE old axiom that lightning does not strike twice in the same place has proved wrong on more than one occasion.

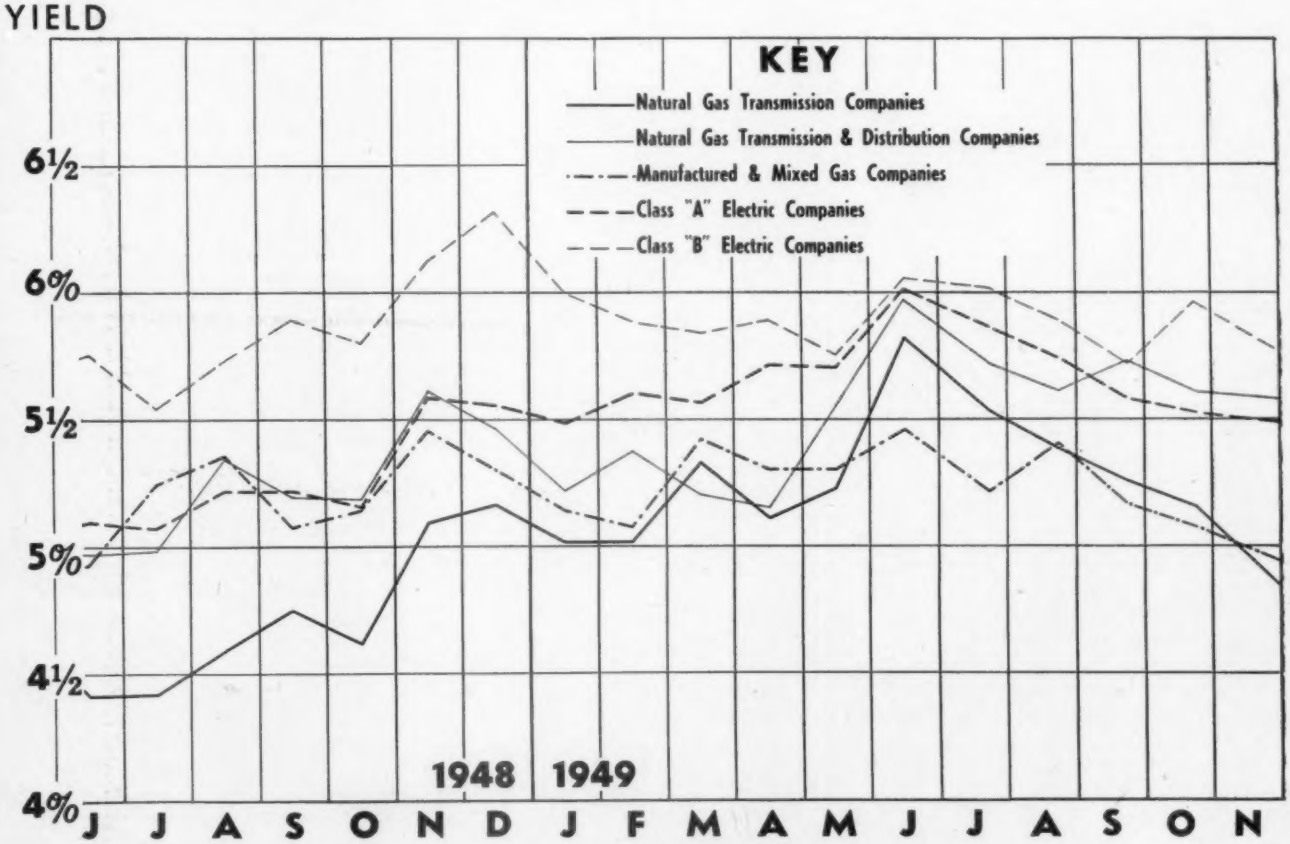
It remained for Madison Gas & Electric Co. (Wisconsin) to disprove the old adage in mid-November when, for the second time in a little more than three years, it set a new low mark for an interest rate on new securities. Its new issue of $3,000,000 of thirty-year mortgage bonds went to the public on November 14 at an interest cost of only 2.58 per cent. This exceeded by a very slight margin the 2.39 per cent low interest cost which this same company set in February 1946, when it sold $4,500,000 of new mortgage bonds.

This encouraging experience for the company reflects not only its own strong position, but also the improvement which has been taking place for some months in the market for public utility common stocks. As measured by leading market indices, utility common stocks now are selling at the highest level attained in three years.

Investment banking firms have been successful in eliminating practically all of the inventories of new bonds which were on their shelves a month ago, and it is significant that little in the way of new utility bond issues is in sight. Most of the utility companies now are planning to resort to sale of new common stock to finance the present portion of their extensive property expansion programs. This is a sharp reversal from the condition which has prevailed since 1946, as most of the financing in the interim has been in the form of bonds.

With the utility averages creeping to higher marks almost daily, the foundation is being laid for favorable investor acceptance of these new equity issues which are about to find their way into the market.

An example of what has been happening in the market for utility com-



Method of Compiling Index of Yields

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

The companies used in compiling this index are:

Natural Gas Transmission Companies: El Paso Natural Gas Co.; Northern Natural Gas Co.; Panhandle Eastern Pipe Line Co.; Southern Natural Gas Co.; Tennessee Gas Transmission Co.

Natural Gas Transmission and Distribution Companies: Columbia Gas System, Inc.; Consolidated Natural Gas Co.; Lone Star Gas Co.; Oklahoma Natural Gas Co.; Pacific Lighting Corp.

Manufactured and Mixed Gas Companies: Bridgeport Gas Light Co.; Brooklyn Union Gas Co.; Laclede Gas Light Co.; Peoples Gas Light & Coke Co.

Class "A" Electric Companies: Boston Edison Co.; Commonwealth Edison Co.; Houston Lighting & Power Co.; Southern California Edison Co., Ltd.

Class "B" Electric Companies: Dayton Power & Light Co.; Hartford Electric Light Co.; Pennsylvania Power & Light Co.; Public Service Co. of Colorado; San Diego Gas & Electric Co.

mon stocks is afforded by the AMERICAN GAS JOURNAL index. All five groups of stocks making up this index have moved into higher ground during the past month and the yields have been cut sharply as a result. The natural gas transmission company stocks used in the index now give an average return of only 4.85 per cent, and the combined transmission and distribution companies yield 5.58 per cent.

Demand for the natural gas company stocks has continued despite a recent mixed-earnings experience since about half of the companies in the industry have been showing some downturn in earnings. This has resulted from a combination of mild weather in its effect on space heating sales, curtailed industrial business and reduced income from hydrocarbon operations chiefly in sale of liquid products.

Accounting in substantial measure for the demand for natural gas stocks has been the widening entry into this field of large institutional investors such as Pennroad Corporation (mentioned in November AMERICAN GAS JOURNAL).

Meeting Customers' Demands

(Continued from page 24)

Operation of this line will spell considerable benefit for the System and for the area which it serves.

Most importantly, it will enable meeting customers' demands adequately and at the lowest possible cost and it will mean considerable improvement in the earnings of the parent company and of its subsidiaries.

For residents of the service areas it will provide a number of benefits, the extent of which will depend on the individual communities. For Milwaukee, Wisconsin, and Ypsilanti, Mich., it will mean the introduction of natural gas for the first time.

The Ypsilantians, in addition to obtaining the comforts and convenience of natural gas, also will receive a Christmas gift in the form of an approximately 35 per cent to 40 per cent reduction in their gas bills through putting in that community the rate now charged in neighboring Ann Arbor where natural gas service already has been in effect. This bonus to Ypsilanti, which is to take effect on the first full monthly billing for natural gas just before Christmas, comes 11 months ahead of time since the operating company, under the agreement of July 1948, when it leased the old municipal gas manufacturing plant, was not obligated to reduce rates until six months after introduction of natural gas, originally scheduled for May 1, 1950.

This new large reduction in rates for Ypsilanti will more than double the 15 per cent initial rate cut which Michigan Consolidated Gas put in effect immediately on taking over the city owned plant.

In most other Michigan areas, which now are served with natural gas, the new line will mean that space heating service can be extended to many thousands of new customers. Michigan Consolidated Gas Co. in its entire area, even before the pipe line went into operation, had received space heating applications from more than 90,000 prospective customers. This equalled the mark which the company had estimated would be reached by the 1951 year-end.

The heavy response represents to company officials, however, merely the speeding-up of applications which had been looked for in later years. Official estimates concerning space heating additions over the next five years now contemplate 175,000 new customers for this type of service, or a gain of only 8,000 above the 167,000 new additions which they had estimated for the same period in the FPC hearings.

The greater supply of gas insured by the new line is expected to permit the Michigan Public Service Commission to eliminate in time the remainder of the surcharge granted Michigan Consolidated Gas Co. to compensate it for operation in recent winters of its high cost gas manufacturing facilities. This will mean eventual further savings of an estimated $2,500,000 a year for residents of Detroit.

Rate reduction for consumers in other areas in Michigan and Wisconsin will await, for the most part, operating cost savings for the system which are expected to accrue when maximum deliverability is lifted to 125 billion cu. ft. annually several years hence.

DUPLICATION OF REGULATION

THE National Association of Railroad and Utilities Commissioners, composed of the Commissions of 47 states, the Securities and Exchange Commission, the Federal Communications Commission, the Interstate Commerce Commission and the Federal Power Commission, has consistently sought to preserve to the States the regulation of public utilities to the extent that the Federal Constitution permits.

Beyond that, as an Association, it has fostered and supported Federal action to the end that there shall be no gap in effective regulation. To the accomplishment of these objectives it has supported legislation in the Congress, has cooperated with the several Federal Commissions, and has supported them in those matters beyond the ambit of State control.

It has likewise resisted, by appropriate intervention in the courts, Federal assertion of jurisdiction in matters which it judged to be an encroachment upon State jurisdiction. It has encouraged and supported legislation to restore State jurisdiction. It clearly appears that it shall continue to do all of these things. Confused and overlapping regulation is poor regulation. It is beyond the competence of any Federal agency to supervise and regulate effectively the multitudinous details of public utility regulation which the full assertion of Federal power (as now construed) would entail.

The seemingly interminable controversy between Federal and State regulatory agencies is a disservice to the public interest. Time which should be devoted by these agencies in the discharge of duties which each in its own sphere can most effectively handle is being needlessly employed in jurisdictional controversy.

The time is long past due when further Congressional action should be taken to spell out in language of greater clarity, if such language can be found, the proposition that the jurisdiction of the Federal Power Commission and of any other Federal body shall not extend to any matter which is subject to regulation by the States. The intent of Congress, and not "the philosophy and views of those entrusted with the administration" of its acts must govern—else we shall have more, not less, of government by men and not by law.

By Harry M. Miller, President, National Association of Railroad and Utilities Commissioners, at AGA convention, October 1949.

Experience in Odorization Shows Need For Standardized Procedures

by Paul L. Covell

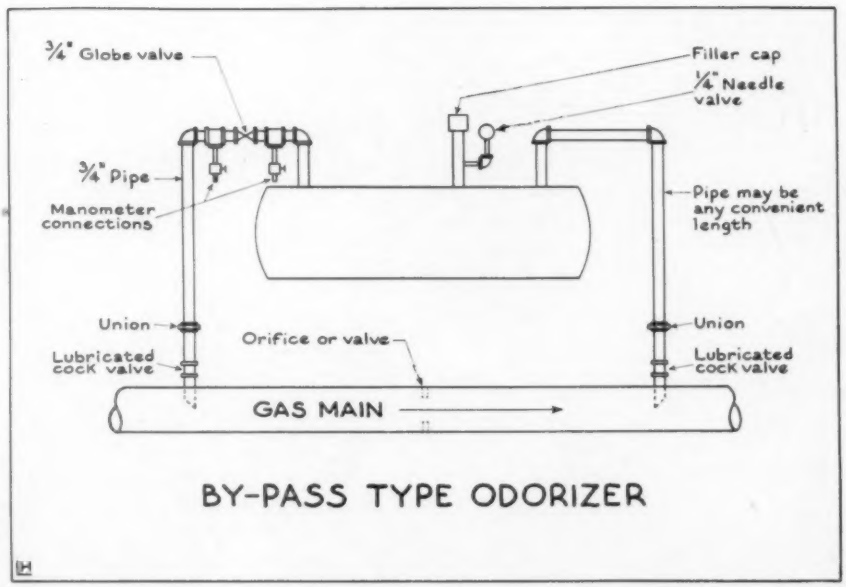
Superintendent of Production, Minneapolis Gas Co.

THE increased use of natural gas has enlarged the field of odorization in the gas industry. With the installation of new pipe lines in progress and contemplated, many cities and towns which are now being served by manufactured gas will soon have natural gas. Beyond the domestic gas field, gas and safety engineers are now studying the addition of odor to industrial gas. As a result gas companies in all parts of the country are now interested in the general field of odorization.

Types of Odorizers

There are two types of odorizers presently in use: The vaporizing type, in which the odorant is vaporized into a by-pass gas stream, and the drip type, which drips the liquid directly into the main gas stream. The vaporizing type is used primarily with concentrated odorants. There are, of course, many kinds of vaporizing units. All so-called automatic odorizers utilize the drop across a constriction or orifice in the main line to proportion the odorant added.

Of the *vaporizing type*, wick odorizers are generally home made tanks with layers of felt cloth dipping down into the liquid. The by-pass or the sweep gas passes between the layers of cloth and leaves the odorizer saturated to be conducted back into the main gas stream. In some cases on small jobs, no wick is necessary. Sweep gas heaters ahead of the odorizer are sometimes necessary to maintain sufficient evaporation and uniform odorization rates, especially during the winter. One of the undesirable factors with these odorizers is that after a period of use, the heavy ends accumulate in the odorizer and they must be drained out. The heavy ends may then be used for slugging into the main gas stream if desired. Another source of trouble is from dust in the inlet gas depositing on the wicks. The odorization capacity is limited. One of the desirable features is the avoidance of possible flood or serious over-odorizing with this kind of odorizer.



Schematic drawing of one type of odorizer available for gas utilities distributing natural gas to their customers.

There are a number of bubbler odorizers on the market which utilize a by-pass stream of gas bubbling through the odorant liquid. Heating jackets maintain the liquid at a temperature so that the desired rate of odorization is attained. These do not have to be drained out, providing the capacity is large enough to odorize the gas flowing. Considerable heat is required, and flooding back through the inlet by-pass gas line is a possibility. This can be avoided by having a tank installed in the inlet gas line of the same capacity as the odorizer tank. Polymerization and deterioration of the odorant also might be a factor if a very high temperature had to be maintained to get sufficient vaporization.

The Papico is a drip type odorizer which utilizes the differential of an orifice to force liquid through a parallel orifice in the odorizer. Partial plugging of the odorizer orifice requires considerable attention by the operators. A heated enclosure is necessary for satisfactory operation during very cold weather.

The Peerless odorizer employs a gas meter on the by-pass gas as a motor to drive a pump. The odorant is picked up from a constant level dish and dumped into a pipe running down to the main gas line. Float valve trouble with sediment from the tank can cause flooding of the odorant, while sticking of the valve closed will cause lack of odorization. Foreign matter and slush ice can clog the filter if employed on the liquid line to the float valve. We believe that a buried tank of the same capacity as the supply

Condensed from a paper presented before the Wisconsin Utilities Assn., Nov. 21, 1949.

tank is a necessity with this odorizer to prevent flooding—the drain on the metering unit being connected to the underground tank. Good odorization rates can be maintained with this odorizer using either concentrated or dilute odorants by changing the pump and meter gears.

The location of the odorizing units should be given special attention. Every time maintenance work is done, or the unit refilled, odorant escapes to the air and is a source of leak complaints for a mile down wind.

The Odorant

Calodorant is a dilute odorant which has been used extensively. It has a so-called gassy odor. Because it is a dilute odorant, considerable quantity must be handled in comparison to concentrated odorants, but the seriousness of flood by the odorizers is minimized.

The concentrated odorants including Pentalarm, Captan, and refinery by-products contain a high percentage of mercaptans.

General considerations regarding an odorant include the following:

1. It must have a distinctive odor, and not be deadening to the sensory organ with continued exposure. It should preferably be obnoxious, but not toxic in low concentration. The odor should not be absorbed by the soil in case of leakage.

2. It should be stable enough to carry to the ends of the distribution system. The odorant should not be oxidized by air such as in propane-air gas or by iron oxide.

3. It should not be corrosive to, or adversely affect, materials in the distribution system, meters, or appliances.

4. It should burn with the gas into innocuous products of combustion.

Minneapolis Experience

The Minneapolis Gas Co. started odorizing March 6, 1935, when we started using natural gas in place of oil in the manufacture of 550 Btu gas, mixing blue gas with natural gas. In the fall of 1939 we started reforming natural gas and mixed that, or blue gas, with natural gas for varying periods until the change over to straight natural gas in the summer of 1947.

At the present time we have 1,170 miles of distribution mains ranging in size from 2″ to 30″ equivalent to 2,671 miles of 3″ and carrying pressures from 5½″ to 175″. The sales per day vary from 97,414 Mcf last winter to 24,965 Mcf this summer.

We desired to maintain a gas that was sufficiently odorized (1) to keep down unaccounted for gas, and (2) to protect life and property of consumer, employee, and employer from potential hazard of explosion, fire, and asphyxiation.

Safety Factor

The U. S. Bureau of Mines stated in one of their papers that, "A warning agent should be present in the gas in amounts sufficient to give a distinct warning when the CO in the air attains a concentration of 0.1 per cent by volume." With 10 per cent CO in the gas, this gave us a safety factor of five with respect to the lower explosive limit when mixing gases. Now, with straight natural gas we get a distinct odor when the gas concentration in air is less than 0.02 per cent giving a safety factor of over 200 with respect to the lower explosive limit.

The first odorant used in the system was Calodorant injected at a central point in the gas system at a rate of two gallons per million cu.ft. of mixed gas. After a short time, due to lack of storage facilities we changed to Pentalarm, mixing two parts of gasoline with one part Pentalarm employing a Papico odorizer. The gasoline was added to the odorant to get readable quantities of odorant used day by day. We odorized at a rate of 0.7 pounds Pentalarm per million cu.ft. of mixed gas. During subzero weather, moisture in the odorant would stop up the orifice so that a heated cover for the apparatus was provided. Even then hourly checks by the operating crew were required to give satisfactory service. In the change from Calodorant to Pentalarm, no material difference in leak complaints resulted and each functioned equally well.

In May 1937 we installed a wick type odorizer in our town border station building to odorize the incoming natural gas. Straight Pentalarm was used with this odorizer. By maintaining a more or less constant inlet gas temperature, this odorizer performed very well giving uniform odorization with little attention; and no trouble was experienced with flooding or overdosing the gas with odorant. The odorizer was made of a section of 16″ pipe eight feet long with vertical layers of wick cloth which dipped into the odorant inside the tank. During the winter of 1938, 13 million cu.ft. of gas per day was odorized satisfactorily with 17 thousand cu.ft. of sweep by-pass gas. During the three years of operation, the water heater, heating the inlet gas, went out six times, and the odorizer had to be drained approximately every six months to get rid of the heavy ends and maintain the evaporating rate. With larger gas loads it became necessary to operate the plant odorizer in conjunction with this town border station odorizer.

In the summer of 1940 we installed a Peerless odorizer and a 10,000 gallon storage tank at the town border station location. We were then in the position to use either concentrated or dilute odorant with sufficient odorization capacity for the gas passing through the station. This Peerless odorizer has stood out-doors with no covering to date.

On May 6, 1940, we changed over to Calodorant at the rate of one gallon per million of the natural gas for industrial customers, and added Calodorant at the plant to give two gallons per million cu.ft. on the mixed gas to domestic consumers. While on Calodorant less trouble was experienced with serious over-dosing or flooding than with concentrated odorants.

During the winter of 1940-41, troubles experienced were: Ice in strainer giving low odorization on four days, and float valve stuck open—flooded or overodorized on two occasions.

In June of 1941, we installed another Peerless odorizer at the plant with a storage tank, and connected the old Papico odorizer into a blue gas line feeding a new mixer station. Our aim then was to odorize at a rate of 0.9 gallon per million cu.ft. at the town border station with a two gallon total in the mixed gas. The old Papico odorized the blue gas to the new mixer station which was operated during the winter months to give this same two gallon per million of mixed gas.

The winter of 1942-43 seems to be a good one for troubles at the Border Station using the Peerless Odorizer, with three floodings and eight freeze ups.

The freeze ups generally occurred in the strainer or piping, but many times the top had to be removed to check the inside of the skunk, and gas leak complaints came in from down wind customers for a mile.

Changes Listed

We had changed to Captan in the middle of December of 1942, aiming at a .4 pounds per million cu.ft. in the natural and 0.7 to 1.0 pounds per million in the mixed gas. We changed back to Calodorant in October 1943.

In the middle of November 1948, we changed to Captan again after purchase and installation of a new bubbler type of odorizer sold by the Natural Gas Odorizing Co. This odorizer was installed on our New Nicollet Avenue, 175 pound natural gas line. We aimed at 1.0 pounds per million on

this odorizer, but an upsurge in complaints caused us to revise the schedule to 0.7 pounds, then we gradually raised this to 0.8 pounds per million.

3,000 Complaints

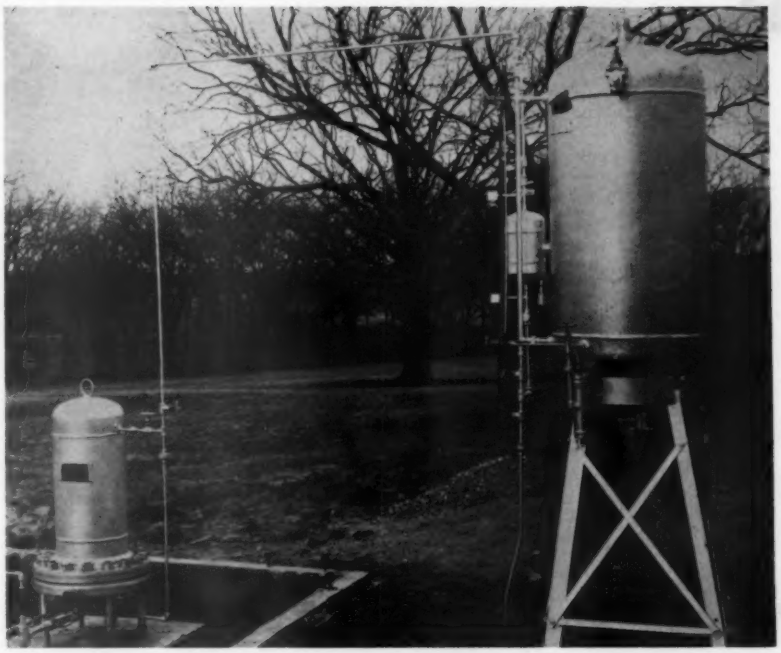
The odorizer stood out in the open and trouble was experienced in getting enough heat into the bubbler chamber which resulted in a lower capacity than required. One of the factors which influenced our purchase of this odorizer was that we thought it foolproof from the standpoint of flooding. It wasn't. On March 28, 1949, our operators, after refilling the odorizer, apparently opened the outlet gas valve first and then the inlet gas valve. Odorant syphoned down through the inlet gas valve and line into the main. Approximately 200 pounds of captan was added in about three hours. That day our telephone lines were clogged and customers started calling the police and fire departments. The concentration was so great that the odor came right through the gas flame. Out of 2,927 complaints that got through the switchboard that day 2,252 of them were leak or odor complaints. The next day the leak complaints dropped to 358 in number and the service men breathed a sigh of relief. I have mentioned this case of flooding because it is fresh in our minds, but we have had other serious cases of flooding with Peerless and Papico odorizers too.

Soon after this, we changed to a combination of Captan and Calodorant. Then to a refinery by-product material put out by the R. W. Stafford Co. at a rate of one pound per million cu. ft. We are now using Captan at the rate of one pound per million. No noticeable effect on leak complaints was observed when these last odorant changes were made.

Precautions To Be Taken

We are now installing three new Peerless odorizers at our three Minnesota river crossings on 175 pound gas lines, which will supplant our present odorizers. Each odorizer will be enclosed in a building at truck height with a concrete floor sloping into a sump.

Because of the near proximity of farmers' homes on the one line, we plan on making that building fairly tight, and keep the room under slight vacuum by blowing air from the room through a deodorizing unit and to the outside. Air fed masks will be furnished if they are necessary for the men to work inside the building. All barrels of odorant will be opened inside the building and maintenance work will be done with the doors closed.



This is an installation of the Peerless meter type odorizer with storage tank, stand, and all necessary fittings. The picture was selected because of the detail shown, and not because of its geographical location.

What is an ideal program for one company may not fit the needs of another company. But as indicated above, the apparatus should:

(1) Inject the odorant at a reasonably uniform rate.

(2) Allow for daily readings of odorant used.

(3) Avoid stoppages and flooding, stay tight and require an overhaul not oftener than once per year.

(4) The location should be such that during refilling and maintenance work the escaping odors are not a source of complaints.

The odorant should:

(1) Give a distinct warning.

(2) Not be absorbed by soil.

(3) Be volatile and carried by the gas.

(4) Be concentrated, requiring small volume to be handled.

(5) Be stable to oxidation by air or iron oxide and to deterioration in the period between manufacture and use.

(6) Be non-toxic in any reasonable concentration.

(7) Not adversely affect materials in the gas system or appliances.

(8) Burn with the gas to give innocuous products of combustion.

Daily records of odorant use, rates, and maintenance should be kept religiously with a signed monthly report placed in a file. A correlation of leak complaints and unjustified leak complaints should be a part of this report. Around five per cent unjustified leak complaints because of slow lighting, imagination, etc., spread evenly over the whole system is desirable.

Field tests at different points in the system should be made regularly with an odormeter or by chemical analysis or both, and these test results should be included in the report.

One man should be directly responsible for the odorization program and trained personnel should do the work that is necessary.

Univ. of Tennessee Will Hold Conference on Combustion

A four-day Conference on Combustion will be held at the University of Tennessee, Knoxville, on Jan. 26 and 27, according to a recent announcement by the department of mechanical engineering.

Half-day sessions will be devoted to each of the following subjects: natural gas, oil, coal, electricity and combustion controls.

Col. Willard F. Rockwell, chairman of the board, Rockwell Manufacturing Co., Pittsburgh, will be one of the feature speakers.

Frederic O. Hess, President, Selas Corp., Philadelphia, will speak at the conference on heat processing with gas; and W. M. Hepburn, vice-president, Surface Combustion Corp., Toledo, will cover the subject of industrial gas furnaces.

Combustion controls will be discussed by A. C. Wenzel, chief contract engineer, Republic Flow Meter Co., Chicago.

Distribution System Is Sectionalized For Conversion to Natural Gas

by F. D. Mackie

Madison Gas & Electric Co., Madison, Wisc.

THE problem of sectionalizing a gas distribution system for conversion from manufactured gas to natural gas is so closely related to the particular system under consideration that we have chosen in this paper to outline the plan used by the Madison Gas & Electric Co.

An outline of the factors to be considered in selecting a plan is as follows:

1. Number of meters.
2. Size of conversion crew.

The size of the conversion crew determines the number of customers which can be converted in one day, and this then determines the approximate number of meters in a district and the number of districts into which the system must be divided. In the case of the Madison Gas & Electric Co. it was determined that the largest district desirable would be 2000 meters and that the most desirable size would be from 1000 to 1200 meters.

3. Type of system.
   (a) Low pressure
   (b) Intermediate pressure
   (c) High pressure

Size and arrangement of *high pressure system*—The Madison Gas & Electric Co. high pressure system is supplied by 1300 Btu liquefied propane-air and operates at from 15 to 25 pounds per square inch pressure and supplies about 1100 meters. Since this system will utilize natural gas with only minor adjustments on some appliances, it will be treated as one district and converted to natural gas in one operation.

Intermediate pressure system—Extent throughout the system, availability of loop feeds, number and location of valves, capacity, number and arrangement of district governors and possibility of installing additional valves and additional governors.

Low pressure system—Size and capacity of mains, number and relative locations of the district governors, natural boundaries between sections of the low pressure system such as rivers, parks, large railroad yards and lakes.

Low Pressure System

Except for the high pressure system described above, the gas distribution system of the Madison Gas and Electric Co. consists of a low pressure grid, made up mainly of 4″, 6″ and 8″ cast iron mains with some minor amounts of 2″ and 3″ main, operating with a pressure range of 4″ to 8″ of water column at the customer's premises and supplied from 40 district regulators. This low pressure system is divided by natural boundaries into several smaller sections which are tied together by only a few low pressure ties. In addition to the customers supplied from the low pressure mains—several large industrial and commercial customers and a small number of residential customers are supplied directly from the intermediate pressure system through service regulators.

The intermediate pressure system which supplies the low pressure grid through the district regulators consists of cast iron main, sizes from 6 inch to 16 inch and operates at pressures ranging from 30 inches of water column up to 100 inches of water column. All of the gas is supplied to this intermediate or pumping system from a pressure house adjacent to the gas plant which is located seven blocks east of the capitol square in Madison. There are two systems, one feeding west from the pressure house supplying the territory west of the gas plant, and one feeding east from the plant supplying the east end of the territory.

The west side pumping main system consists of a double loop, either side of which has sufficient capacity to supply the westerly load area by raising the sendout pressure.

The east end pumping main system is supplied by a radial feeder for the first several blocks and then develops into a single loop system.

Since the west side pumping main system is a loop all the way from the plant, the problem of sectionalizing was much easier than on the east side. To sectionalize the west side, it was decided to turn the natural gas into the north leg of the west side loop and let it go as far as the first district regulator. The first district then consisted of an area which could be supplied by this governor. This portion of the low pressure grid was then cut out of the rest of the system. With natural gas supplying the first regulator on the north leg of the loop, the rest of the west side load area was then supplied from the south leg of the loop. Following conversion of this district, natural gas was allowed to flow to the next district regulator and another section of the low pressure system cut out and changed. This same procedure was followed until natural gas was being supplied all the way around the loop.

Only Five More Valves Needed

This west side pumping main loop was well supplied with valves so that it was only necessary to cut in a total of five more valves to be able to sectionalize it into 12 districts. Lubricated type plug valves with sealed-in gear boxes on sizes 10 inch and larger were used. They were installed by cutting out a section of pipe, using gas main bags to hold back the gas and maintaining service through the looped feeders and coupling them into the main with mechanical couplings.

One section of the west side pumping main extended so far past the loop feeder that it could not be handled as one district so it was broken down

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A paper presented at the gas and electric convention, Wisconsin Utilities Association, Milwaukee, Wisc., Nov. 21-23, 1949

into two districts by utilizing the main line of the high pressure system which runs parallel to it. This was done by making a connection from the high pressure system to the pumping main system at a point adjacent to the last regulator on this radial leg of the pumping main and valving it so that this district will be supplied from the high pressure system until the next district in closer to the loop can be supplied and converted.

Another Plan Needed

Since the east side pumping main system is supplied radially from the pressure house, it was necessary to develop a different plan for the east side. To supply natural gas to a portion of the east side pumping main, an extension from the new natural gas connecting line was made and a regulator installed and connected into the looped portion of the east side pumping main. Following conversion of the west side districts, natural gas will be supplied to the east side from this regulator and the same procedure followed of taking one district at a time and converting it to natural gas. This east side pumping main system had enough valves so that no additional valves were necessary and the only work involved was cutting in the tie for the new connection to the natural gas supply.

Having determined this over-all plan and established the approximate boundaries of the sectionalizing districts, the next step was to prepare a careful and detailed plan of the valving procedure, listing all of the valves to be used, the sequence of their operation, the locations where the low pressure mains were to be cut and the locations where the low pressure mains were to be re-coupled following the conversion of a district.

Following final acceptance of this detail plan, the next step was to prepare to sectionalize the low pressure system. It was found that the low pressure mains would have to be cut or valved off at a total of 88 locations, two of which were already equipped with valves. A field check was then made of these 88 locations and the exact locations of the cuts were selected. These locations were indicated by measurements on detail maps of the distribution system. The maps also showed if the main was in the rear of the curb or in the traveled portion of the street. At this same time, the addresses of the customers on each side of the cut at each cutting location were determined. This information was necessary for sorting the conversion orders into the proper districts and the addresses were also placed on the detail maps.

It was decided to install valves at the cutting locations which were in the traveled portions of busy streets and to make temporary cuts and plug the mains at the other locations where the main was in the rear of the curb or where it was under the pavement of less heavily traveled streets. This work required the installation of 4", 6" and 8" valves at 31 of the 88 cutting locations. At the remainder of the locations the main is being uncovered, tapped and bagged off and a piece of pipe approximately 20 inches long cut out of it. A similar piece is then put back in with mechanical couplings, the bags removed, the tapped holes plugged and the ditch planked over to await for the time the cut is to be made.

When the time comes to make the actual cut, the main will again be bagged off, the short piece of pipe removed and the ends of the pipe plugged. At locations which will have to remain plugged for several days, as for example from district No. 2 to District No. 19, mechanical plugs will be used. At locations which will be plugged for only a few days, the pipe will be closed with expanding rubber stoppers. These locations where the main will be cut will also be utilized to blow-down or purge the low pressure mains of manufactured gas when the natural gas is turned on.

As fast as the natural gas is turned into the districts, those cuts between these districts and districts which have already been converted to natural gas will be restored by opening the valves and removing the plugs and reclosing the cut mains. These low pressure ties will be depended on to supply a portion of the gas to the new districts during the conversion period.

Following the determination of these procedures, instructions and schedules were prepared for each district, showing all the sectionalizing plans in detail. Prints showing the locations of the district governors, the pumping main valves, the low pressure sectionalizing valves and the low pressure main cuts were included.

At the time the valves were installed in the pumping mains, pressure checks were made to be certain that the loop feeds were open and in satisfactory operating condition.

When the low pressure mains were cut for the installations of sectionalizing valves as in preparation for temporary plugs, checks were made to be sure that the main was clear in both directions.

Additional checking and testing work done included inspecting, testing and greasing all valves and inspecting, testing, adjusting and repairing if necessary, of all district regulators.

Construction work goes ahead on the myriad of long distance pipe lines which are going to carry natural gas to points thousands of miles from the Texas fields. And the advent of natural gas in cities hitherto served with manufactured gas brings many problems, one of which is discussed in this article.—THE EDITOR.

Part of the large exhibit of industrial gas equipment at the Cleveland Metal Show.

Industrial Gas Exhibits Attract Throngs At Metal Show in Cleveland

SOME 68,000 persons visited the 1949 National Metal Congress and Exposition held in Cleveland during the latter part of October.

"Economy in Production" was the key note of this year's show, and the Combined Industrial Gas Exhibit, showing many industrial gas applications, exemplified this theme by calling attention to the economies and other advantages of gas fuel and industrial gas equipment. In this largest single exhibit area of the Metal Show, ten manufacturers of industrial gas equipment combined to make this one of the largest exhibits ever sponsored by American Gas Association.

The individual cooperating exhibitors and the equipment displayed by them follows:

American Gas Furnace Co., Elizabeth, N. J.

A working reciprocating shaker hearth gas-fired furnace, and a live display of various types of burners for pattern heating.

Eclipse Fuel Engineering Co., Rockford, Ill.

Various types of McKee-Eclipse heavy duty burners, proportional mixing equipment, gas control valves, and a packaged unit Scotch marine boiler.

Gas Appliance Service Co., Chicago.

Several small operating furnaces under full automatic temperature control, special burners for flame hardening and a "Roto-Flame" high speed forge furnace for heating bar ends.

The Gas Machinery Co., Cleveland.

An illustrated animated display showed the operating characteristics of their carborundum radiant tube for high temperature furnace heating.

Charles A. Hones, Inc., Baldwin, N. Y.

Two "Buzzer" furnaces were in full operation. One was a full muffle type heated to 2400° F., and the other was a semi-muffle type at 2000° F. Both were under full automatic temperature control. A display showed many of their various types of burners.

The C. M. Kemp Manufacturing Co., Baltimore, Md.

A newly developed safety control system was demonstrated on an indicating panel having a small burner with automatic spark ignition and flame detector. Several burners were operated in another display to which the premixed gas was supplied by a Kemp system mixing machine.

The Lithium Co., Newark, N. J.

In this exhibit the advantages of lithium atmospheres were shown in an attractive display together with samples of work done.

Sellers Engineering Co., Chicago.

Here two types of immersion fired boilers were displayed as being adaptable to industrial processing as well as for normal requirements of hot water and steam.

The Spencer Turbine Co., Hartford. Conn.

The blowers on display were designed to supply combustion air and several of them were in use for this purpose.

Selas Corp. of America, Philadelphia, Pa.

Again the operating scale model of their high speed "Gradiation" heating unit was the focal point of their exhibit. Another display had several types of radiant burners in operation and the background panel had many illustrations of installations. The newly acquired dehydration unit was also shown.

In the AGA Lounge Area the Associated Factory Mutual Fire Insurance Companies had an operating display to demonstrate their new gas safety control system.

Weirton, W. Va., Gets New Gas Business Office

This attractive new business office at Weirton, W. Va., is the latest development in the long-range modernizing program of The Manufacturers Light and Heat Co. It is equipped with a summer-winter gas-fired air conditioner.

Legal Opinions Show Shifts in Attitude Toward Gas Rate Laws

by Leo T. Parker

Attorney at Law, Cincinnati, Ohio

IS A state law valid which gives full power to the public service commission to establish valid gas rates, notwithstanding a franchise ordinance, previously accepted by the gas company, clearly specifies definitely lower rates?" The answer is yes, if the state law was enacted before enactment of the ordinance, or changed conditions render void the franchise ordinance.

For example, in City of Big Rapids v. Michigan Consolidated Gas Co., 37 N. W. (2d) 136, the testimony showed facts, as follows: The Michigan Consolidated Gas Co. is a public utility distributing natural gas within the city of Big Rapids and elsewhere. On March 5, 1948, the gas company filed a petition with the Michigan public service commission, seeking to establish new and uniform gas rates. Thereupon the city instituted a suit claiming that the gas company was bound by the terms of a franchise ordinance enacted by the city and adopted by the voters. In other words, the city sought to prevent the public service commission from approving gas rates higher than the rates specified in a previously enacted franchise ordinance.

The higher court refused to hold that the public service commission could not increase the gas rates in view of a state law which provides:

"The Michigan public service commission is hereby vested with complete power and jurisdiction to regulate all public utilities in the state except any municipally owned utility and except as otherwise restricted by law. It is hereby vested with power and jurisdiction to regulate all rates, fares, fees, charges, services, rules, conditions of service and all other matters pertaining to formation, operation, or direction of such public utilities."

This court said:

"The matter of fixing rates for gas, either natural or artificial, to be furnished by the defendant to the plaintiff is hereby held to be within the jurisdiction of the Michigan public service commission."

Also, see City of Jackson v. Consumers Power Co., 20 N. W. (2d) 265. Here the claim was made by a city that franchise provisions gave the city the right to fix gas rates. However, the period during which the city could fix the rate by agreement had expired.

The higher court refused to hold that the franchise ordinance was automatically extended or imply that it remained in effect. This court stated important law as follows:

"A company holding a franchise to use city streets for gas mains, to furnish gas and operate in the city in a public service capacity pursuant to an ordinance after the last former rates agreed upon by the city council and the company had expired has the right to promulgate rates subject to the control of the state public service commission."

Another important point of law decided by this court is that a rate for gas *as fixed* in a franchise ordinance is *not* binding on the gas company after the rate as so agreed has expired. In other words, where the gas company continues the service thereafter it has a right to establish new and higher gas rates which will yield a fair and reasonable income from the investment and in consideration of present day high material and labor costs.

Power of Public Service Commission

According to a recent higher court the regulation of gas rates by a public service commission is purely a legislative function, and orders of the commission have exactly the same effect as acts or statutes of the legislature except when the commission's orders violate or are limited by a state statute, or a state constitutional provision. In other words, orders and regulations issued by a public service commission, which acts within the scope of its legal authority, are equal in effect to valid state laws. Therefore, only when state laws clearly authorize a special representative of the people, as People's Counsel, to appeal from or use the public service commission, may the counsel do so.

For example, in Bosley v. Dorsey, 60 Atl. (2d) 691, a state law was litigated which provides: "Any company, corporation, association, person or partnership or other interested party shall have the right to proceed in the courts to vacate, set aside or have modified any order of the public service commission on the grounds that such order is unreasonable or unlawful."

One Dorsey was elected People's Counsel, and he filed a bill with the court against the public service commission. He alleged that in 1945, the commission found the fair value of the Consolidated Gas, Electric Light & Power Company's property for ratemaking purposes to be $148,376,143, and ordered the income to be calculated on a unified rate base, rather than a separate rate base for each of the three lines of utility business, gas, electric light, and steam for heating purposes. In November, 1946, the commission announced that it would revise the rates in the light of changed conditions, which had produced a decrease in earnings from gas and an increase in earnings from electric operations, but that it *would not* relinquish calculation on a unified rate base. On December 30, 1946, the commission found the revised fair value of the company's property and approved increases in gas rates to $2,500,000, and ordered the company to submit revised electric rate schedules for domestic and commercial use and industrial power sufficient to reduce the charges to the extent of $3,650,000. The company submitted revised schedules and Dorsey, the People's Counsel, protested against them. He claimed that the electric rate for industries is

the lowest in the locality but that the gas rate will greatly increase the *combined* cost of gas and electric services to hundreds of thousands of domestic and commercial consumers. Nevertheless the commission on January 28, 1947, approved the schedules.

The People's Counsel filed suit and asked the court to declare a separate rate base for each of the three lines of utility business. Dorsey claimed that the order deprives the consumers of due process of law and equal protection of the laws.

Dorsey claimed that by authority of the above mentioned state law he could appeal to the court. The higher court refused to agree and said:

"The Legislature made amendments to the Public Service Commission Law, and could then have authorized the People's Counsel to take appeals from orders of the commission, it is significant that it did not do so. . . . Orders of the commission issued in the exercise of its statutory powers have the same force and effect as acts of the legislature, except where limited by the statute itself or some constitutional provision. We find no reason why the People's Counsel must be given power by implication to protect the interests of the public."

In other words, the courts will not *imply* that a representative of the people has authority to file appeals from orders issued by the public service commission relating to gas rates. Such authority *must be clearly* given by valid state laws, otherwise the orders and decisions rendered by the public service commission are final.

For comparison, see Miles v. Public Service Commission, 135 A. 579, 49 A.L.R. 1470. Here a bill to review the order of the public service commission was filed by the People's Counsel. However, on the day *before* the bill was filed, his resignation as People's Counsel was announced. Hence, the court held that the People's Counsel had no further authority, and that the public service commission need not consider the bill.

Another important point of law is: The public service commission Law may order the People's Counsel to appear before the commission on behalf of the public, or in defense of the public interest, yet if the commission does not authorize him to prosecute appeals from its orders, the sole power of the People's Counsel is spectator or advisatory.

For further comparison, see Gregg v. Public Service Commission, 121 Md. 1. This court held that the right to challenge an order of the commission is clear if a state law provides that "any person in interest being dissatisfied with any order" may commence a suit against the commission. This court held that under this law, suits and appeals may be filed against the commission either by a regulated public utility or by any individual, Peoples Counsel or corporation having an interest adversely affected by the order. Also, see Public Service Commission v. Byron, 138 A. 404. This court said:

"It is recognized that regulation of rates by a public service commission is purely a legislative function. . . . The public service commission, created to protect the interests of the public, is a body experienced in the regulation of public utilities and assisted by a staff of experts."

Court Refuses Decision

Recently a higher court refused to render an opinion involving discontinuing gas service, where the commission's order merely denied the gas company the right to discontinue the service and required the company to furnish service until another application was filed.

For example, in Public Service Corporation v. Railroad Commission, 215 S. W. (2d) 213, it was shown that the public service commission denied a gas company the right to discontinue gas service to rural users, notwithstanding gas and pipe were not available to nearby city. The commission's order specified that if in the future the gas company desired to discontinue the service, an application must be filed.

The gas company appealed to the higher court and contended that it should not be compelled to supply gas to the rural consumers. It asked the court to reverse the commission's ruling. The higher court refused to do so, saying:

"The present existing rights of appellant (gas company) and the rural users as determined by the order, must be measured by the terms thereof. The order simply denies appellant the right to discontinue service to the rural users and, further, that the present service being rendered to such rural users shall be continued and not changed except on application to the commission."

Different Rates for Same Classification

Considerable discussion has arisen from time to time over the legal question: Can a gas company lawfully charge industrial firms in same classification different rates for gas? According to a recent higher court the answer is yes, if both rates are approved by the public service commission, and the gas company is not liable in damages to the consumers who paid the higher rate. Their only relief may come from the public service commission which upon proper application may lower the rates and make rates equal for the same classifications.

For illustration, in Columbia Baking Co. v. Atlanta Gas Light Co., 50 S. E. (2d) 382, the Columbia Baking Co. sued the Atlanta Gas Co. to recover the alleged excess in gas rates. The baking company proved that in 1930, the public service commission prescribed rates for industrial consumers of gas. On January 30, 1931, the gas company entered into a contract with the baking company by which the latter agreed to pay the regular industrial rate for gas. Beginning in 1935 the gas company entered into certain special arrangements with various industrial users, including laundries, dry cleaning establishments, dye works, linen services, rubber companies and others, by which it sold gas to them for industrial use at rates less than those charged the baking company. The counsel for the latter company contended that from January 1, 1936 to 1945, it believed it was buying gas on the same basis as other similar consumers, and that the gas company was under a duty, as a public utility, both at common law and under the rules of the public service commission, to sell gas to the baking company for industrial use at as low rates as it sold it to other users similarly situated.

During the trial the gas company proved that the public service commission investigated the laundry, and other businesses and approved the lower rates. Therefore, the higher court refused to hold the gas company liable to the baking company and said:

"The commission is charged with the duty of fixing rates and preventing unjust discrimination between the various classes of those served by public utility companies."

Things You Can't Do

You can't expect either a court, legislature or a state official to invalidate or vary present power of the public service commission.

In Ethington v. Wright, 189 Pac. (2d) 209, the higher court held that the public service commission has full and exclusive power in the matter of prescribing classifications, rates, and charges of gas corporations, and in making rules, regulations, and orders, concerning such classifications, rates, and charges by which gas corporations are to be governed, and the commission's exclusive field may not be invaded by the court, the Legislature, or the executive.

You can't expect to base annual depreciation upon fair value or reproduction cost.

(Continued on page 39)

News of the Gas Industry

A. L. Roberts

H. L. Stowers

A. L. Roberts, H. L. Stowers Named To New Posts By Texas Gas Transmission

Texas Gas Transmission Corp. has appointed A. L. Roberts and H. L. Stowers to fill important posts in the organization.

Mr. Roberts was named general superintendent of the company's pipe line system. He has been active in pipe line work since 1927 when he was connected with the engineering and construction division of the Empire Co. in Bartlesville, Okla. He joined Kentucky Natural Gas Corp., a predecessor company of Texas Gas, in 1930, as district pipe line superintendent.

Mr. Stowers, appointed chief engineer, joined Memphis Natural Gas Co., also a Texas Gas predecessor, in 1937 as assistant chief engineer. In 1944 he was promoted to chief engineer, and in June of this year, as work started on the new Texas Gas Texas-to-Ohio pipe line, he took over the duties of chief engineer.

P. A. Fusselman, of Philadelphia Electric, Dies Suddenly

Paul A. Fusselman, general superintendent of Philadelphia Electric Company's gas transmission and distribution department was found dead in his home in Philadelphia on November 23. He was 63.

The late utility executive apparently was the victim of a heart attack. Mr. Fusselman, a graduate of Bethlehem Preparatory School, and Lehigh University, was a native of Allentown, Pa. He had been associated with the utility industry since 1909. Following service in World War I, he was affiliated with the Counties Gas and Electric Co. prior to its merger with Philadelphia Electric Co.

He was a member of the American Gas Association, and the Pennsylvania Gas Association.

FPC Authorizes Pipe Line For Central Hudson

The Federal Power Commission has authorized Central Hudson Gas & Electric Corp., Poughkeepsie, to construct a 40-mile pipe line which will carry natural gas for distribution in Dutchess, Orange and Ulster Counties, New York. Central Hudson now supplies this area with manufactured gas.

In a concurrent order, the Commission authorized Home Gas Co., of Pittsburgh, to construct a metering and regulating station at Tuxedo, N. Y., in order to supply Central Hudson's requirements.

Central Hudson's line will extend from the Tuxedo connection in a northerly direction to Central Hudson's gas plant in Poughkeepsie. The project includes an underwater crossing of the Hudson River. Estimated over-all cost is $1,700,000.

Estimates of Central Hudson's peak day demands range from 5,200,000 cu. ft. in 1951 to 7,700,000 cu. ft. in 1953. Central Hudson expects to be able to take deliveries from Home Gas by August 1, 1950.

Irene L. Muntz, of Rochester, Is AGA Home Service Chairman

Irene L. Muntz

Irene L. Muntz, director of home service for the Rochester Gas and Electric Corp., has been appointed chairman of the American Gas Association Home Service Committee, according to H. Preston Morehouse, chairman of the Residential Gas Section.

Miss Muntz is a graduate in home economics of Mechanics Institute, now the Rochester Institute of Technology, and the University of Rochester.

As a member of the home service department she was appointed director in 1942 of a staff of 13 serving Rochester and outlying territory.

In addition to her work as Chairman of the AGA Home Service Committee this year, Miss Muntz is also serving as President of the Women's Council, Rochester Chamber of Commerce, and chairman of the Home Safety Committee of the New York State Home Economics Association.

Richard H. Tillman

Mason C. Albrittain

Tillman Retires at Baltimore; Albrittain Takes Over

Richard H. Tillman retired October 1 as general manager, industrial and commercial department of the Consolidated Gas Electric Light and Power Co. of Baltimore. Mr. Tillman served the company for 40 years, having started in 1909 as an industrial engineer with responsibility for developing the company's industrial electric load.

At the time of his retirement his responsibilities included supervision of the company's industrial power, industrial fuel, district steam sales and lighting service departments and his field of activities had grown from a one-man operation to an organization of five departments with 118 employees; and likewise the industrial and commercial sales of gas, electricity and steam had expanded many times.

Mason C. Albrittain succeeds Mr. Tillman as general manager, industrial and commercial department. He entered the company 25 years ago as a junior industrial engineering representative—electric in the industrial power department. In 1930 he became a senior industrial engineering representative—electric. In 1942 he was transferred to the company's personnel department as assistant manager and served until November 1, 1947 at which time he became assistant general manager, industrial and commercial department.

Mahnke and Jacobsen Named By LP-Gas Ass'n

Appointment of R. H. Mahnke as assistant managing director and K. B. Jacobsen as west coast secretary of the Liquefied Petroleum Gas Association was announced recently by Arthur C. Kreutzer, managing director.

Mr. Mahnke will make his headquarters at the organization's executive offices in Chicago, and Mr. Jacobsen will be located in Oakland, Calif.

Legislation Problems Freely Discussed at Independent Ass'n Meeting

The largest attendance on record was chalked up at the 1949 annual meeting of the Independent Natural Gas Association, held at Dallas on October 31.

Clyde H. Alexander, President of the Creslenn Oil Co., of Dallas, was elected President of the group.

Other new officers chosen were: Homer W. Long of Guymon, Okla., first vice-president, and C. P. Rather of Birmingham, Ala., President of the Southern Natural Gas Co., second vice-president. Re-elected were F. W. Peters of Tulsa, Okla., treasurer of the Oklahoma Natural Gas Co., treasurer, and John A. Ferguson, Washington, D. C., executive director.

A. B. Harper, President, Arkansas-Oklahoma Gas Co., and President of the Association, presided at the sessions. In the "President's Report," he reviewed the work of the Association, and commented on the actions of Congress and of various agencies and courts on matters affecting the industry.

Mr. Harper said that the Supreme Court decision in the Hugoton Production case "not only gave notice to the FPC that it cannot compel dedication of unattached reserves of a natural gas company, but the language used by the court gives many of us high hope that if the matter of FPC jurisdiction over independent producers and gatherers selling to interstate lines in arm's-length transactions ever reaches that court, the FPC will be advised that it cannot reach out to control such sales."

In discussing "Winter Supply Problems of Transporters," S. B. Irelan, of Oklahoma City, President of the Cities Service Gas Co., said that "bringing natural gas to new markets on a limited basis at first will result, no doubt, in eventually creating a demand for unlimited, unrestricted domestic use for cooking and space heating purposes. Facing the situation of greatly increased withdrawals, the known reserves will be called upon not only to supply the full unrestricted requirements of present markets but greatly enlarged markets from the further extension of pipe line facilities."

G. A. Staples of the Chicago Corp., in discussing "Winter Supply Problems of Producers and Gatherers" pointed to the method worked out for the Carthage Field of Panola County, Texas, as presenting an example of what can be done toward working out the problems of gas producers in Texas when the operators in a field have a sincere desire to produce their wells in a fair and orderly manner, and he suggested that it seems to be a model which operators in other fields desire to copy.

He discussed methods of preventing hydrate formation in well head fittings, meter runs and pipe lines in winter, and said the "only completely satisfactory method of preventing the formation of hydrates in a gas system is to dehydrate the incoming gas to a dew point low enough to preclude hydrate formation at any point in the system."

Rex G. Baker, director and general counsel of the Humble Oil & Refining Co., Houston, discussed the possibility of the FPC attempting to assert jurisdiction over sales made to interstate pipe line companies by independent producers and gatherers in arm's-length transactions, Mr. Baker said that exercise of such jurisdiction by the FPC "would bring about a chaotic condition in the industry, and in many cases would afford the Commission an opportunity virtually to confiscate the gas reserves of the sellers."

Referring to the Harris and Kerr bills, he said that if passed "a bill of this sort would be beneficial to producers who sell their natural gas to the interstate pipe lines which purchase gas from them and to the public who should be interested in securing a dependable supply of natural gas under competitive conditions."

Maj. B. A. Hardey, independent producer of Shreveport, La., addressed the group on "Status and Prospects of Natural Gas from Tidelands." After discussing the types of structures found in the Gulf Coast offshore area, and the oil discoveries to date, Maj. Hardey traced the gas discoveries, listing 11 and noting that there are 14 active wildcat operations now in progress in the offshore waters of Louisiana, any one of which may well be the next oil or gas discovery. Further, he said, it has been estimated that 75 good geophysical seismic prospects have been found in Louisiana Gulf waters, and the number in Texas waters is estimated at 25.

While it is difficult to make any precise estimate of potential reserves, he said, there is sufficient evidence to show large reserves like those in the adjoining land area. One estimate predicts an ultimate reserve of 786 billion cu. ft. for the present 11 gas well areas in the Louisiana Gulf of Mexico, he stated. Using other methods of estimating the reserves in the area, he continued, it indicates that the potential reserves of the Gulf tidelands will be about four trillion cu. ft, as a minimum.

"Competitive Position of Natural Gas Versus Coal, Fuel Oil, Manufactured Gas, and Atomic Energy" was discussed by Dr. Frank H. Dotterweich, Director of the Division of Engineering, Texas College of Arts and Industries.

Dr. Dotterweich discussed the sources of energy supply, comparative prices of fundamental fuels, a comparison of manufactured and natural gas prices and efficiencies, and atomic energy as a competitive fuel.

Next on the program was a panel discussion on "Methods and Laws Relating to Gas Measurements." Participating in this discussion were Scott Hughes, counsel for Southern Union Gas Company, Dallas, Tex.; Marshall Newcomb, general counsel for Lone Star Gas Company, Dallas, Tex., and R. R. McCracken, of counsel for Cities Service Gas Company, Oklahoma City, Okla. They discussed the efforts that have been made toward establishment of a standard gas measurement law and the minimum field price laws.

600 Attend Meeting of Wisconsin Ass'n

Nearly 600 persons attended the convention of the Gas and Electric Divisions of the Wisconsin Utilities Association at Milwaukee on November 21 to 23.

Carl A. Altenbern, President of the Association, earnestly urged all persons who believe in the American system to become crusaders in the cause to persuade people to vote for candidates for public office who state they will fight against all forms of socialization.

Referring to the construction and conversion programs of gas companies, Mr. Altenbern said:

"Eight gas companies will spend approximately $9,100,000 in 1949 to change over to natural gas, and $5,000,000 in 1950 for construction and conversion to natural gas. Many gas companies have recently revised or eliminated restrictions on house heating with gas.

John C. Doerfer, chairman of the Wisconsin Public Service Commission, spoke on duplication of regulation and on the financing of public utilities.

J. C. Bolender, assistant to vice-president, Milwaukee Gas Light Co., described the changeover gas used by his company. He presented a report of standby facilities to be used by Wisconsin gas utilities.

R. O. Brown talked on the "Use of LP Gases for Standby."

G. T. Bentley, superintendent of production, Michigan Consolidated Gas Co., talked on "High Btu Oil Gas Production."

John W. Schutt, Madison Gas & Electric Co., in reporting on LP gas, said that the use of liquefied petroleum provided the solution for extreme seasonal peak demands.

The paper of P. L. Covell, superintendent of production, Minneapolis Gas Co., appears elsewhere in this issue of AMERICAN GAS JOURNAL.

Distribution Problems Discussed

Robert C. Davisson, project engineer, Equitable Meter Division, Rockwell Manufacturing Co., presented a comprehensive paper on the use of district and service regulators.

R. L. Goodland, Racine, Wisconsin Gas & Electric Co., F. D. Mackie, Madison Gas & Electric Co., and John Dopp, Fond du Lac, Wisconsin Power & Light Co., described preparations of distribution systems for natural gas. They reported on leak clamping and carbo-seating, sectionalizing for conversion and use of copper tubing for service renewal.

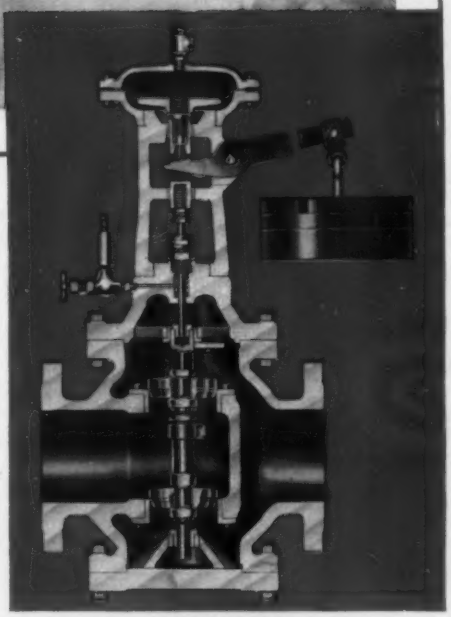
C. George Segeler, utilization engineer, American Gas Association, described what constitutes a good city ordinance for appliance installation and how it can be administered.

For New— ADAPTABILITY..... EASY SERVICING

Check MODEL 44 for THESE ADVANTAGES:

- **Versatile.** As a pressure-reducing regulator, may be direct-operated, pilot-loaded with "SENSITROL," or instrument-operated. Excellent as a motor valve for use with differential-limit controls.
- **Valve and Seats Removable.** Valve can be quickly removed or replaced without disturbing regulator.
- **Valve Types and Sizes Interchangeable.** By changing valve discs on stem and removable seats in body, either hard, beveled-seat valve or soft raised-seat valve can be installed. Also, reduced-size valves can be substituted either temporarily or permanently, according to requirement.
- **Valve Adjustment Made Easy.** Quick adjustment — positive locking with no loss of adjustment—no shims or difficult grinding ever needed.
- **Compact Design.** Minimum weight, minimum space requirement for given capacity and flow areas, reduces cost of equipment and housing.
- **High Safety Factor.** Extra-thick body walls of high-strength iron or electric cast steel, tested and machined for perfect alignment.

Threaded Stem Connectors, Flanged Pressure Joints, Lubricated Stuffing Box, Guide Wings Eliminated, Other Improvements.



MODEL 44
Balanced-Valve Regulator
Pipe Sizes, 2" to 16"
High-Tensile Iron, 125 lbs. W.P. (Series 15)
High-Tensile Iron, 600 lbs. W.P. (Series 30)
Electric Cast Steel, 1200 lbs. W.P. (Series 60)

THE CHAPLIN-FULTON MFG. CO.

38 PENN AVE., PITTSBURGH 22, PA.

E. R. Acker Succeeds Geo. Whitwell on Laboratory Committee

Completing 21 years of service on the Laboratories Managing Committee of the American Gas Association, George E. Whitwell, vice-president in charge of sales of the Philadelphia Electric Co., has resigned from that body.

He will be succeeded by Ernest R. Acker, President and general manager of the Central Hudson Gas & Electric Corp., Poughkeepsie.

Mr. Whitwell was senior member of the committee in years of service and served as its chairman from 1941 to 1946. As Chairman he was responsible for carrying the Laboratories through the war period. He insisted that a trained staff be maintained throughout the war so that the Laboratories would be in a position to meet the postwar activities. This was done by accepting war contracts for the development and production of scientific instruments and equipment for the armed services.

AGA Home Service Workshop To Be Held in Chicago

The Home Service Workshop, sponsored by the Home Service Committee of the American Gas Association, will be held at the Palmer House, Chicago, January 4, 5 and 6, 1950.

Subject matter, covered in conference discussion and by relation of personal experiences, has been scheduled for each of the morning and afternoon sessions, with speakers from within and outside of the gas industry highlighting achievements and methods of home service representatives.

Among the speakers are: F. X. Mettenet, Peoples Gas Light & Coke Co., H. Preston Morehouse, Public Service Electric & Gas Co.; R. E. Ginna, Rochester Gas & Electric Corp.; H. Vinton Potter, AGA.; E. Carl Sorby, Geo. D. Roper Corp.; and W. J. Schmidt, Long Island Lighting Co.

Two moving pictures will be shown at sessions of the Workshop: "Gas for Home and Industry," produced by *Encyclopedia Brittanica*, and "New Freedom in her Modern Gas Kitchen," by *McCall's* and AGA.

"How to improve the efficiency of a home service department" is the central theme of the program directed particularly to the new women in home service work.

Presentations will include "Setting Up A Year's Program"—"Planning the Demonstration"—"Make the Most of the Home Call" and a series of short talks in a symposium "Here and There with Home Service."

Temporary Rate Increases Made Permanent for Baltimore

The Public Service Commission of Maryland issued an order on November 29, 1949 making permanent certain temporary increases in electric, gas and steam rates which the commission had previously approved for Consolidated Gas Electric Light and Power Company of Baltimore effective with May 1949 meter readings.

The commission stated that in its opinion, the permanent rates just approved will produce a rate of return between five and one-half and six per cent.

E. L. Payne Joins Empire Stove As Regional Manager

Elroy L. Payne

Elroy L. Payne, former President of the Payne Furnace Co., Beverly Hills, Calif., has joined Empire Stove Co., Belleville, Ill., as regional manager for southern California.

Lee A. Brand, Empire vice-president, in announcing the appointment gave 9242 Beverly Boulevard as Mr. Payne's new regional headquarters.

At the same time, Mr. Brand announced that the Beverly Heating Supply Co., 9242 Beverly Boulevard, Beverly Hills, had been appointed a distributor of Empire gas appliances.

R. V. Burnette Is Promoted By Rockwell Manufacturing

A. J. Kerr, vice-president of Rockwell Manufacturing Co. has announced the appointment of R. V. Burnette as supervisor of gas products for the Chicago, Columbus and Pittsburgh sales districts.

Mr. Burnette joined Pittsburgh Equitable Meter in 1926. During the ensuing 23 years he held positions of junior engineer, gas sales engineer, and more recently was attached to the Pittsburgh main office sales staff.

He is a member of the Illinois Society of Professional Engineers.

Detroit Michigan Stove Wins Engineers' Award

The Detroit Michigan Stove Co. of Detroit, manufacturers of domestic and commercial ranges, has received the merit award of the American Society of Industrial Engineers for outstanding contributions to productive arts and sciences in its field.

AGA Testing Laboratories Will Change Name

Effective January 1, 1950 the name of the American Gas Association Testing Laboratories will be changed to American Gas Association Laboratories, in accordance with action taken at a recent meeting of the Executive Board of AGA.

The testing of gas appliances and the awarding of the seal of approval to appliances meeting the required standards of safety and dependability will continue to be an important function of the Laboratories. Since the initiation of the gas industry's research program under the PAR Plan five years ago, a considerable share of the Laboratories' enlarged personnel and facilities has been devoted to research work. The abridged name is believed to be less restrictive in its description of the function of the Laboratories.

Hagerty of Metropolitan Life Joins L. I. Lighting Board

Harry C. Hagerty, vice-president and treasurer of the Metropolitan Life Insurance Co. has been elected a director of the Long Island Lighting Co. and its affiliates, Queens Borough Gas and Electric, and Nassau and Suffolk Lighting.

Mr. Hagerty was one of the Erie Railroad Reorganization Managers and has served on reorganization committees of 12 railroads.

In becoming a director of Long Island Lighting, Mr. Hagerty replaces Col. Charles G. Blakeslee, who, upon retiring December first, relinquishes the posts of general counsel and director.

David K. Kadane, who has been assistant general counsel, has been appointed counsel.

Dresser Manufacturing Chooses A. N. Zahniser for Northeast

A. Newton Zahniser has been appointed northeastern representative of Dresser Manufacturing Division, according to an announcement by H. Z. Hight, sales manager.

In his new capacity, Mr. Zahniser will call on gas customers in New England, eastern New York and eastern Pennsylvania.

Before joining Dresser, Mr. Zahniser was with the Wailes-Dove Division of Koppers Co. He is a graduate of Allegany College.

Mr. Zahniser makes his home in Norwich, Conn.

FPC Examiner Okays Increase For United Pipe Line

Federal Power Commission Presiding Examiner Ewing G. Simpson has filed a decision authorizing United Gas Pipe Line Co., of Shreveport, to construct 105.6 miles of 20-inch diameter loop line in Louisiana to increase the company's capacity for the delivery of natural gas to Mississippi River Fuel Corp. by 122,000,000 cu. ft. per day to a total of approximately 195,000,000 cu. ft.

The company estimates cost of the construction program at $5,113,300.

Hilding Carlson Joins Selas As Promotion Manager

Hilding Carlson has been appointed advertising and sales promotion manager of Selas Corp. of America, consulting and manufacturing heat process engineers, according to an announcement by Frederic O. Hess, President.

Mr. Carlson was managing editor of *Dodge Reports Press Service* at one time, and was also regional executive of the United States Bureau of Labor Statistics in the Cleveland and New York regions. He is a former associate in the firm of E. Holley Poe & Associates, natural gas consultants, New York.

Book of Pipe Protection

The fifth edition of the Book of Pipe Protection describing the latest advances in pipe protection methods has been published by Hill, Hubbell & Co. (division of General Paint Corporation). In 22 pages the book gives complete information on coating and wrapping applications.

Legal Opinions Show

(Continued from page 34)

In Equitable Gas Co. v. Pennsylvania Public Utility Commission, 51 Atl. (2d) 497, the higher court held that an annual depreciation allowance cannot be based upon the fair value or reproduction costs, but should be based upon the book cost of depreciable and depletable property, since to make an allowance in excess of the cost would be to allow an additional profit over and above a fair return.

You can't expect the court to consider most questions of law.

In Munder v. Purcell, 52 Atl. (2d) 923, the higher court held that where taxpayers participated in hearings on the public service commission's reconsideration of its order dismissing petitions for reduction of gas rates, such taxpayers appeal must be dismissed as involving moot law questions.

Also, see Davies v. Columbia Gas & Electric Corp., 70 N. E. (2d) 655. This court held that a "moot case" is one which seeks to get (1) a judgment on a *pretended* controversy, when in reality there is none, or (2) a decision *in advance* about a right before it has been contested, or (3) a judgment upon some matter which cannot have any practical legal effect upon a then existing controversy.

You can't expect a court to render a decision on a petition not filed within time provided by law.

In Michigan Consolidated Gas Co. v. Federal Power Commission (Panhandle Eastern Pipe Line Co., Intervenor), 167 Fed. (2d) 264, the higher court held that where a petition to review and set aside natural gas rate orders of the Federal Power Commission were not filed within the statutory time, the court lacked jurisdiction to review the orders and could not render a decision.

Things You Can Do

You can depend upon a public service commission having practical authority.

In Davies v. Columbia Gas & Electric Corp., 60 N. E. (2d) 656, the higher court held that a public utilities commission has exclusive jurisdiction to make orders relating to rates to be charged to consumers of gas, and unless reversed or modified they are valid and have the effect of a court order.

You can expect the higher court to uphold the validity of a decision which allows a gas corporation six per cent return of the investment.

In Mississippi River Fuel Corp. v. Federal Power Commission, 163 Fed. (2d) 433, it was shown that the business of a natural gas pipe line company consisted in part of the sale of natural gas to public utilities for resale, and in part of sales to industrial consumers. The higher court held that sales to public utilities are subject to regulation by the Federal Power Commission, but the latter is not. Also, this court held that where the Federal Power Commission allowed this natural gas pipe line company six per cent rate of return on its investment such rate of return was not unreasonable, insufficient or supported by substantial evidence.

This court also held that a gas rate order of the Federal Power Commission which does not provide for proper allowable expenses, tax depreciation, and return is unfair, unreasonable, and confiscatory.

Bureau Issues Bibliography on Synthetic Liquid Fuels

More than 725 individual references to Bureau of Mines investigations on the production of liquid fuels from oil shale, coal, lignite, and natural gas are contained in a revised bibliography on synthetic liquid fuel publications released by Bureau Director James Boyd.

The report covers publications and reports appearing up to May 1949.

Manufacturers' Employee Gets $300 for Tool Suggestion

A cash award of $300 has been given to Ralph W. Day by The Manufacturers Light and Heat Co. in recognition of a suggestion he presented for improved company operations. This is the largest sum of money to be presented to an employe since the gas company established a suggestion program in 1948.

Mr. Day suggested, designed and helped make a tool to remove the burr from the inside and outside of gas well tubing.

In many instances, the final length of casing or tubing on gas wells extends too far above ground level for easy operation of valves. Common practice has been to cut the pipe at a convenient height above ground and then remove the residual burr created by the pipe cutter.

Gas is flowing out of a well while the burr is being removed with a file or chisel. Therefore, this burr removal job has been recognized as one requiring good safety practices.

Mr. Day originated a tool which not only does the burr removal job safely, but also leaves a smooth tapered surface for pipe threading.

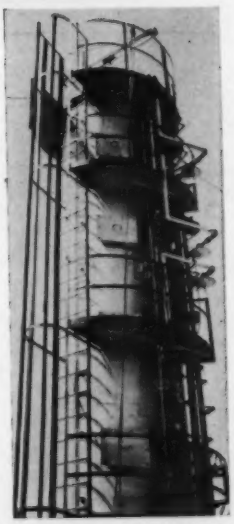
Since coming with Manufacturers Light and Heat in 1941, Mr. Day served as a fireman in a gasoline plant, a construction laborer and an automobile mechanic. He is now a gas production field man working out of the Elm Grove production-transmission department divisional shop of the gas company.

Are You Planning to REFORM NATURAL GAS ?

The Gas Machinery Company has had many years' experience in designing and installing equipment for reforming natural gas in water gas sets. This type of apparatus is still serviceable and GASMACO is at your service! But perhaps you would like to learn about the new designs and new apparatus which we now have to offer?

GASMACO has the know-how!
GASMACO designs for your profits!

Complete Services — Engineering Shop Fabrication and Field Erection — for hydrocarbon reforming.



THE GAS MACHINERY COMPANY
16114 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers Fabricators Erectors Gas Plant Equipment and Industrial Furnaces

Better Bricks

(Continued from page 23)

through one three in. lubricated plug valve. This connects to the main plant gas line. It is used as the control valve and shut-off when the kiln is shut down. It reduces firing labor to a minimum.

In operation, all the kiln burners were lighted. The individual valves were opened wide. The three in. main valve was then adjusted for proper firing rate, which was checked every four or eight hours. The single control valve was adjusted as needed.

The firing mouths were bricked up, with three removable bricks allowing for any adjustment of secondary air.

Damper operation for the flue was not used until the carbon burning was passed. The damper was then kept open about 50 per cent of the extent used for coal.

In its first few firing operations, this simple, safe, inexpensive installation gave the following results:

4.46 Mcf of 1,050 Btu natural gas per ton of brick, or at 45c per Mcf, a fuel cost of $2.02 per ton of brick.

12.2 Mcf of natural gas per 1,000 5½-pound shale brick fired to a temperature of 2,000 degrees F.

The grade of brick produced in the kiln has been good. There has not been a single flashed brick. The bricks are very clean and free from fly ash. The bricks are not stuck together nearly as much as under coal-firing, and are more easily removed from the kiln.

The even heating of the kiln has been very encouraging. There is no great differential in temperature between bottom and top.

Progress of the brick firing is checked with Forrester shrinkage keys. These keys show that a very uniform heat is maintained all the time.

Coal-firing cycles have been generally followed. We are now just starting an experiment to speed up the firing. At the same time we are seeking to improve burning efficiency and other operating angles.

The installation of high-pressure burners is being tested under actual operating conditions with the most modern installation of luminous flame burners, in an attempt to establish the merits of each type of burning.

Results from each installation seem to be similar for the first firings, but it is still too early to establish full comparisons.

The cost of burners, piping and labor to outfit a 32-foot-diameter kiln with 10 firing mouths with the high-pressure burners should not exceed $750.

Among the advantages secured with the use of natural gas in this kiln was the elimination of coal, ashes and dirt adjacent to the kiln. This gave much needed storage space for brick.

The firing mouths and the bag walls do not need repairs. There are no clinkers to chisel out. The flame retention nozzle and tuyere block make it almost impossible for the burner to be blown out.

On the basis of the data we were able to gather on this subject, one plant was encouraged to equip all of its nine kilns with natural gas burners.

METAL RIM
LMPCO

DIAPHRAGMS

—have become the most popular and the most talked about gas meter diaphragms ever invented.

When first put on the market 25 years ago, they were revolutionary.

Improvements made down thru the years have put METAL RIM DIAPHRAGMS out in front of all others.

They are engineered to the highest degree of perfection.

For

1-A Sprague
1-D Sprague
No. 2 Sprague
No. 3 Sprague
No. 1 Ironclad
No. 1 Tobey

— and now

METAL RIM DIAPHRAGMS

for

NO. 5 SPRAGUE GAS METERS

LANCASTER METER PARTS CO.
Post Office Box 378 Lancaster, Ohio

Superior Meter Introduces New Service Cleaner

Superior Meter Co., Brooklyn 32, has announced a new service cleaner with several technical advances, and at a reduction in price.

The device forces either alcohol or air into service lines under pressure and is equipped with an automatic shut-off for the convenience of the operator. The 4-gallon tank is electrically welded steel, hot dip galvanized after forming to increase resistance to corrosion; it has a 5-inch open top to permit easy filling and cleaning. The bayonet-type locking cap has a safety locking lever which prevents removal of the top while pressure remains in the tank. The 2-inch seamless brass pump features a self-adjusting tapered valve stem. A 5-foot length of hose with connections, and a carrying strap are included.

Are you getting your own copy of American Gas Journal?

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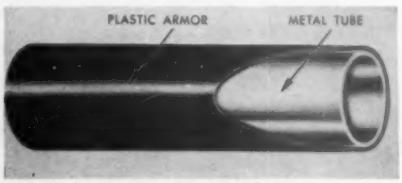
GAS CONTROL SINCE 1892

Plastic Armored Metal Tubing Has Been Developed

A new plastic armored metal tubing having corrosion resistant properties and designed for use as electrical conduit or for transmission of water, air or gas is announced by Samuel Moore & Co., Mantua, Ohio.

Known as Dekoron tubing, the new product consists of almost any thermo plastic, such as polyethylene, or cellulose acetate buterate, extruded over metal tubing of ferrous or non-ferrous analysis. Virtually any color of plastic can be used for purposes of color coding.



Present applications include electrical conduit in chemical, salt and other plants having corrosive atmospheres. The manufacturer of Dekoron tubing states that life of the conduit in corrosive atmospheres is practically unlimited since it is impervious to acids, alkalies, etc. Tests are currently being conducted for oil and gas pipe lines.

Dekoron tubing is being made in diameters up to and including 3" O.D., of any desired length. Present range of plastic thickness is .010 inches to .062 inches. A method of joining lengths of Dekoron tubing has been developed. Ordinary conduit benders are adequate for shaping the tubing after the plastic armor has been applied.

North American Has New Safety Shutoff Valve

The North American Manufacturing Co. has recently added to its production line a new Associated Factory Mutual approved valve known as the series "21" safety shutoff valve. Designed for the protection of industrial furnaces against dangerous accumulations of gaseous or liquid fuels in the event of a power failure, this valve stops the flow of any gas or liquid when the current to its solenoid is interrupted. When the power is restored, the valve remains closed until the trouble is corrected, at which time the valve is reset manually.

Any number of switches wired in series with the solenoid can protect the installation against explosion hazards resulting from failure of air pressure, gas or oil pressure, etc., in addition to general power failure, or the valve may be tripped closed manually if desired. It cannot be wedged or propped open with power off since the resetting handle is independent of the valve stem.

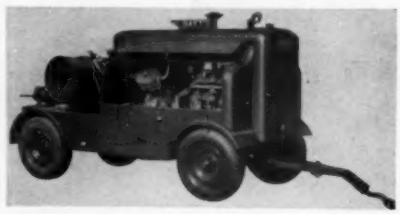
Featuring a globe type, soft-seating valve the series "21" safety shutoff valve can be had with all iron body and internals for use with corrosive gases or liquids. They can be furnished with chain reset wheels for overhead mounting and with auxiliary switches for independently powered alarm systems. Available in sizes from ¾" through 6" they may be equipped with solenoids of 110, 220, 440 volts and 60, 50 and 25 cycles.

Bulletin 21 gives engineering information. Write to The North American Manufacturing Co., 4455 East 71 Street, Cleveland 5.

Davey Offers Custom-Built Heavy Duty Compressor

A new line of custom-built heavy duty compressors, known as "Air Chief Airistocrats," is announced by Davey Compressor Co., Kent, Ohio.

These compressors are manufactured on special order for users who demand the

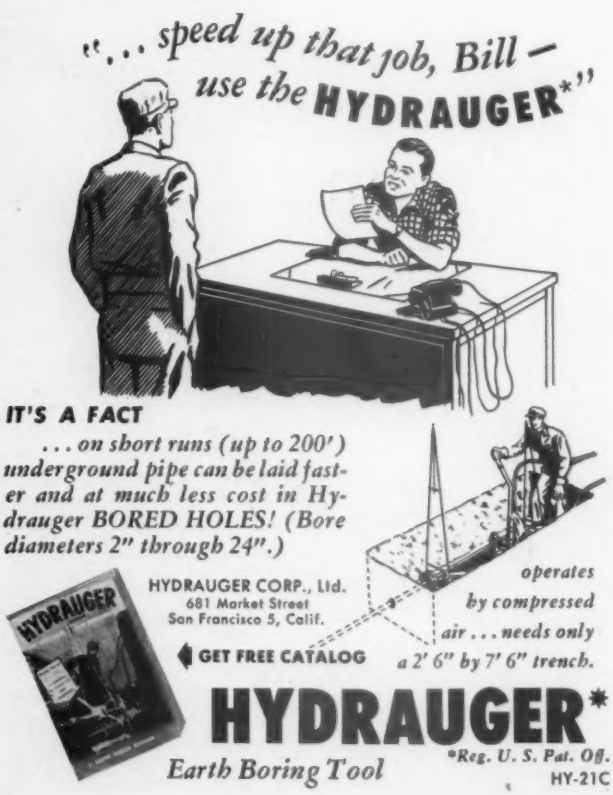


best in compressor equipment, according to Paul H. Davey, President.

"The Airistocrat incorporates advanced design and accessory features not available in any standard machine," Mr. Davey said.

Production of the custom-built units will be limited to 100 per year in 105 and 210 cfm sizes and 50 per year in 160 and 315 cfm capacities, according to Mr. Davey.

The Model 105 pictured above, delivers 105 cfm per minute at 100 lbs. pressure. It is 124 in. long, 66 in. wide and 68 in. high. Weight is 4100 lbs.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CONVENTION CALENDAR

January

23-27 *Southwest Air Conditioning Exposition,* State Fair Grounds, Dallas, Texas

23-27 *American Society of Heating and Ventilating Engineers,* Annual Meeting, Dallas, Texas

30-31 *Joint AGA-EEI Planning Meeting,* Netherland Plaza Hotel, Cincinnati, Ohio

March

23-24 *New England Gas Association,* Hotel Statler, Boston, Mass.

27-29 *Southern Gas Association,* Galveston, Texas

31 *The Maryland Utilities Association,* Lord Baltimore, Baltimore, Md.

April

10-12 *Mid-West Gas Association,* Hotel Lowry, St. Paul, Minn.

12-14 *National Petroleum Association,* Hotel Cleveland, Cleveland, Ohio

20-22 *Florida-Georgia Gas Association,* Business Conference, Biltmore Hotel, Palm Beach, Fla.

28-29 *Indiana Gas Association,* French Lick Springs Hotel, French Lick, Ind.

May

1-4 *Chamber of Commerce Annual Meeting,* Wash., D. C.

8-9 *A.G.A. Natural Gas Department,* Spring Meeting, Mayo Hotel, Tulsa, Okla.

Sales and Revenues Increase in Third Quarter

Total revenues from sales of gas by utilities for the third quarter of 1949 were $297,000,000, an increase of 5.0 per cent over the like quarter of 1948, according to the American Gas Association. Revenues from commercial sales represented the highest percentage gain, rising 12.2 per cent. Residential gas revenues were up 5.0 per cent and industrial gas revenues gained 2.7 per cent over a year earlier.

In the 12 month period ending September 30, 1949, total revenues from utility sales of gas were $1,630,000,000, an increase of 8.7 per cent over revenues of $1,499,000,000 in the previous twelve-month period.

The gas utility industry was serving 22,900,000 customers at the end of September, 1949, an increase of 4.8 per cent over 1948. Residential customers totaled 21,200,000, an increase of 4.2 per cent over the 20,400,000 served in the previous year. Commercial and industrial customers gained 14.7 per cent and 7.2 per cent respectively.

Total revenues from natural gas sales during the third quarter of 1949 were $183,000,000, a rise of 7.3 per cent over the comparable quarter of 1948. For the 12 months ending September 30, 1949, revenues from natural gas sales were $1,053,000,000, an increase of 12.0 per cent over 1948 when natural gas revenues were $940,000,000.

Sales of natural gas during the third quarter totaled 615,000,000 Mcf, an increase of 6.2 per cent over the like quarter of 1948. For the year ending September 30, 1949, sales of natural gas amounted to 3,024,000,000 mcf, a gain of 10.9 per cent over sales of 2,726,000,000 mcf, in the like period a year earlier. At the end of September 1949, about 12,700,000 customers were being served with natural gas, an increase of 11.0 per cent over the previous year.

Revenues from manufactured gas sales in the third quarter of 1949 totaled about $97,000,000, an increase of 2.9 per cent over $94,000,000, in the like period in 1948. For 12 months ending September 30, 1949, manufactured gas revenues were $480,000,000, a gain of 6.3 per cent over a year earlier.

Manufactured gas sales in the third quarter of 1949 totaled 77,000,000 Mcf, a decline of 3.8 per cent under 81,000,000 Mcf sold a year earlier. For the 12 months, manufactured gas sales were 430,000,000 Mcf, down 3.6 per cent under 446,000,000 Mcf sold in the comparable period in 1948. Manufactured gas customers declined slightly in the second quarter, totaling 8,500,000, a decrease of 0.3 per cent.

Revenues from mixed gas sales in the third quarter of 1949 were about $17,000,000, a decrease of 6.7 per cent under the comparable quarter in 1948. For the 12 months ending September 30, 1949, mixed gas revenues totaled $97,000,000, a drop of 9.9 per cent under a year earlier.

Mixed gas sales in the third quarter of 1949 were 24,000,000 Mcf, a loss of 3.1 per cent under a year earlier, when mixed gas totaled about 25,000,000 Mcf for the 12 months ending September 30, 1949, mixed gas sales were 140,000,000 Mcf, a decrease of 7.7 per cent under 152,000,000 Mcf sold in the previous year. Mixed gas customers at the end of September 1949, numbered 1,700,000 customers, a decrease of 9.1 per cent under the previous year.

'Packaged' Service to Industry Announced by Koppers

A "packaged" service to the gas industry to assist it in meeting rapidly increasing demands has been announced by Koppers Company, Inc.

General Brehon Somervell, President, said that the unified program now offered the gas industry provides consultation, design, manufacturing, construction, and maintenance service. Gas industry services of Koppers now are coordinated under a new gas department of the company's engineering and construction division, he said.

This Division comes under the general managership of Joseph Becker, vice-president. J. Hawley Taussig, Jr., who until recently was assistant engineer of works for the Philadelphia Gas Works Co., is manager of the new gas department. Mr. Taussig is the son of J. Hawley Taussig, who for years was a leader in the gas industry and who served as consulting engineer for the United Gas Improvement Co.

"We believe that this new type of service is needed by the gas industry and that it is unique in its scope," General Somervell said in making the announcement. "Problems of conversion to the use of natural gas in many areas; determination of the advantages of mixing natural and manufactured gas; problems of providing adequate standby equipment in case of pipe line

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failures meeting peak cold-weather demands for gas; determination of the nation's natural gas reserves and how long they will last; providing continuance of a fair return on investment for stockholders—all these face the industry today.

"Under the new program, Koppers not only is coordinating all its gas industry services but is expanding them."

Upon request, Koppers will conduct an economic and technical study of the gas problems of a utility, community, or industry. Subsequently it will furnish a complete operational plan, including recommendations for needed revisions or improvements in any phase of the current operations.

Economic advisory services, and, wherever necessary, research facilities of the entire Koppers organization also will be made available to the gas industry.

The services of W. Reed Morris, who before his recent retirement was vice-president and general manager of Koppers Gas and Coke Division, and now is the company's special consultant to the gas industry, will be coordinated with the new "plan-to-production" service wherever possible, General Somervell added.

Trunkline Changes Proposal In FPC Petition

Trunkline Gas Supply Co. has submitted to the Federal Power Commission a proposal to construct a 740-mile Louisiana-to-Illinois pipe line designed to carry about 250,000,000 cu. ft. of natural gas per day for delivery to Panhandle Eastern Pipeline Co. Estimated overall cost of the project is $85,000,000.

The construction plan was set forth in a petition for amendment of the Commission's April 29, 1949, order, which authorized Trunkline to build a 711-mile pipe line from Texas to Nebraska, for the purpose of supplying 250,000,000 cu. ft. of natural gas per day to Northern Natural Gas Co.

In its petition, Trunkline said that Northern Natural has refused to enter into a written agreement covering the purchase and sale of the gas, but that Trunkline recently concluded an agreement with Panhandle covering the sale for a 20-year period of the 250,000,000 cu. ft.

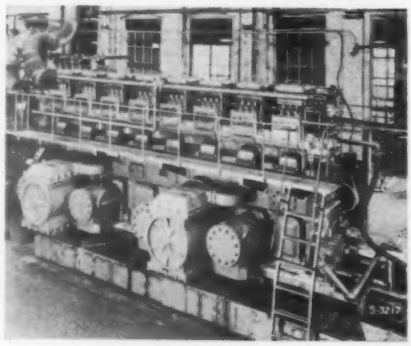
Range, Water Heater Figures Issued by GAMA

Manufacturers shipments of gas ranges reached an all-time high in October when 260,000 units were shipped, according to preliminary reports received by the Gas Appliance Manufacturers Association. Previous highest monthly shipments were reached in May, 1948 when 257,800 units were shipped and October, 1948, when 257,500 gas ranges were shipped.

October shipments exceeded by 78 per cent the 1936 to 1940 pre-war average October shipments.

Sales of automatic gas water heaters for the year 1949 will probably total 1,350,000 units, according to the association. This estimate was based on sales figures for the first ten months of 1949 and showed a steady gain since January 1949.

During the first nine months of 1949, shipments of automatic gas water heaters totaled 1,007,000 units and compares with 1,175,000 units shipped during the similar period of 1948, a decrease of 14 per cent.



New gas engine gas compressor.

New Worthington Compressor Tested at Buffalo

Worthington Pump and Machinery Corp. conducted the initial shop test of its new Uniflo gas engine gas compressor in November at Buffalo Works.

The first unit will be installed at the West Monroe, Louisiana station of the Tennessee Gas Transmission Co. on the pipe line from the Rio Grande Valley to the Niagara Frontier.

Gas Companies Use More Anthracite

A survey just completed by the Anthracite Institute shows that 37 gas companies in northeastern U. S. used 493,000 tons of anthracite in gas manufacturing in 1948, of which 301,000 tons were used for boiler fuel and 192,000 tons for generator fuel.

This compares to the reported 310,000 tons used by the same companies in 1947, of which 226,000 tons were for boiler fuel purposes and 84,000 tons for generator fuel.

The total consumption of anthracite by gas companies in 1948 increased 59.0 per cent over 1947 consumption while the use of anthracite for boiler fuel and generator fuel in 1948 increased 33.2 per cent and 128.6 per cent respectively over consumption for these two purposes in 1947.

These figures were obtained by a canvass of 136 gas companies in the New England and Middle Atlantic states, 86 of which replied with 37 stating they used anthracite and 49 reporting negatively. It was assumed that most of the 50 companies which did not reply to the survey are not users of anthracite.

United Fuel Asks Approval for Underground Storage

United Fuel Gas Co., of Charleston, West Virginia, has applied to the Federal Power Commission for authorization to construct and operate a total of 12 miles of pipe line for the transportation of natural gas to two underground storage pools in West Virginia.

The company also asked FPC to approve certain changes in its existing facilities, including the transfer of a gas engine driven compressor unit from one West Virginia compressor station to another, and changes in the operation of compressor units at one of these stations.

Estimated over-all cost of the proposed facilities is $1,326,000, which the company proposes to finance from funds on hand.

The company said the 12 miles of pipe line, which would include three miles of 10¾-inch pipe line and nine miles of 20-inch pipe line, would transport natural gas received from the Tennessee Gas Transmission Co. pipe line system to the storage pools in West Virginia, one near Nitro and the other near Clendenin. The compressor facilities are proposed to be used for injecting the gas into storage and delivering it from storage into the company's existing system.

United Fuel said that the facilities are necessary for the adequacy and continuity of service to present markets, and will not be used to serve additional customers. However, the company added, some gas may be delivered through these facilities to the Cobb (West Virginia)-Rockville (Maryland) pipe line of Atlantic Seaboard Corp. and Virginia Gas Transmission Corp. to meet part of the requirements of Consolidated Gas Electric Light and Power Co. of Baltimore, which recently was authorized by FPC to receive natural gas from Atlantic Seaboard.

United Fuel is a subsidiary of Columbia Gas System.

John C. Pankow Dies; Was with Detroit Michigan 38 Years

John C. Pankow, director of sales, Detroit Michigan Stove Co., died on November 30, after a brief illness.

He was chairman of the national committee on LP gas promotion, and a member of the Detroit Sales Executive Club. In his 38 years with the company, he rose from the position of office boy to director of sales of the company's domestic and commercial ranges.

Dow Builds Second Casinghead Gas Collecting Plant

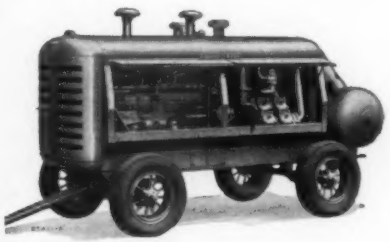
L. J. Richards, chief engineer, The Dow Chemical Co., has announced construction under way of a three months' project—a compressor station and pipe line to collect vented gas from the Beaver Creek oil field, five miles northwest of Higgins Lake, Michigan.

Collected casinghead gas will be used as fuel and cracking stock for the next five to eight years to augment the present supply of gas at the Midland plant. The company's Ludington plant started operation September 1, for an estimated five-to-eight-year period, on gases similarly collected from the Pentwater, Michigan, field.

Ingersoll-Rand Has New Diesel Portable Air Compressor

For users who prefer full diesel-engine drive for portable compressors, a new 500-cfm Mobil-Air has been announced by Ingersoll-Rand. The engine is the International-Harvester heavy-duty UD-24 which starts as a low-compression gasoline-engine and after a warmup period is shifted to full diesel operation by means of a single lever.

This portable, known as the IKA-500, has all the features used on Ingersoll-Rand's



KA-Series Mobil-Air compressors in sizes from 105- to 500-cfm. The new floating-speed regulator slows down the compressor to the lowest practical working speed that compresses just enough air to hold the pressure. Full 500-cfm capacity is delivered at rated 100 psi pressure.

Ingersoll-Rand introduced the first 500-cfm portable compressor in 1939. Up to this time it has been available with either the type H oil engine having spark ignition or the heavy-duty Waukesha gasoline engine. Now, with the addition of the IKA-500, this compressor is available with a choice of three engines.

For additional information write Ingersoll-Rand Company, 11 Broadway, New York 4.

New Method for Shut-Offs When Converting

M. B. Skinner Co., manufacturer of repair clamps and service saddles, has just announced a new method for quick shut-offs when converting to natural gas. Its use is said to result in sizable savings in both labor and material, when compared to the conventional method employing costly valves.

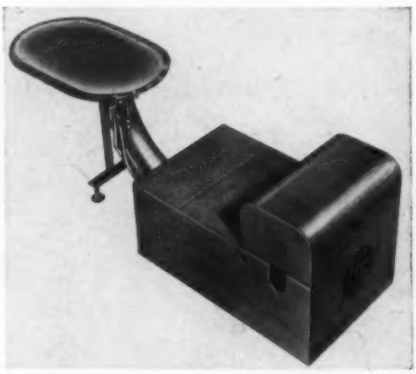
The shut-off is made by cutting the pipe, inserting a thin disc of 18 gauge steel, and applying a Skinner seal split coupling clamp. When shut-off has been completed, the line may be re-opened quickly by loosening the clamp, removing the disc and resealing the clamp.

Full details, specifications and prices are contained in a new illustrated folder available from the M. B. Skinner Co., South Bend 23, Ind.

Handley-Brown Brings Out New Ash Pit Conversion Burner

Production of a new line of ash pit gas conversion burners was announced recently by Harold E. Handley, President of Handley-Brown Heater Co., Jackson, Mich.

The new line supersedes the "R" and "S" series of ash pit burners which the firm



has manufactured for many years. Planned as a companion to the Handley-Brown fuel door burner, the new series are AGA listed under latest requirements.

The new burners are equipped with either round or oval burner heads. Capacity of each burner is from 60,000 to 300,000 Btu.

Descriptive material is available on request.

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MORE EFFICIENT Iron Sponge is an iron oxide with maximum ability to absorb H_2S. Capacity is greater, trace removal lasts longer. Adaptable to all conditions . . . to high or low pressure purification.

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Wrong !
ADJUSTMENT
¶ Just when you're taking a nice warm shower, someone decides to water the lawn or fill the laundry tubs — then your hot and cold water adjustment is upset because of pressure change!
¶ The same principle applies to Gas Pressures — changes in pressure will affect the proper mixing of gas and air necessary for optimum operation of gas burning units.
¶ Maxitrol Gas Regulators automatically adjust and control Gas Pressures 24 hours a day — every day!
¶ If you have problems in Pressure Regulation please call on our Engineering Department to help you.
DETROIT GAS REGULATOR CO.
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Sensible Regulation

(Continued from page 13)

hearing was necessary, resulting in 2,172 hearings. The hearings covered about 100,000 pages of testimony. Obviously it is impossible for the commission to sit as a body in every one of these cases.

The orders that follow these hearings are the result of the combined experience and judgment of five commissioners. Our commission sessions resemble somewhat a trial court weighing all the pros and cons before passing judgment in the form of an order and opinion. The process of weighing pros and cons is one that requires a great deal of thought and consideration and takes much time.

Owners or operators of a business can combine knowledge of the subject with experience and power to get things done. They make decisions on either oral reports or personal observation. We, as a public body, must rely on testimony. This essential difference provides, in part, an answer to a frequent query as to why immediate action cannot be had by utility companies on their petitions.

Probably the principal hurdle today is rising costs—cost of equipment, of manpower, in fact, cost of everything. I have heard it said that utility business is the only one that guarantees a profit. This idea apparently springs from the fact that the law permits a utility to increase rates to enable it to sell its service for more than cost.

In theory, I suppose, this is true but I do not need to tell you that this assumption does not always work out in practice.

The public will buy only when its needs require the article or service offered. It will buy only when it is financially able to do so.

Laws cannot make an industry grow, nor can laws operate a business. Only individual initiative can do that assisted by a minimum of law.

I am one who believes that in spite of our present federal governmental regulations, he is best governed who is least governed. I regret that some of our national leaders regard this as an old fashioned doctrine, but, my friends, you and I know that this old fashioned philosophy has enabled this country to assume not only a commanding position but the leadership of the world.

I spoke of rising costs: Let me cite a few excerpts from a recent report by Commissioner Bedenkapp of our commission in a bus rate case which the commission confirmed. He said:

"A better solution than increased fares would be a substantial reduction in operating costs, but as to many of these costs, the commission is powerless to act. We can, of course, control losses to some extent by permitting the discontinuance of economically unsound lines, but as concerns many of the items of expense, such as material costs, taxes, etc., we have little or no control."

To keep costs within the limits required by a specific operation is most definitely management's duty. Managers should pursue every possible avenue of cost reduction, public relations, maintenance, supplies, labor relations, labor productivity, etc. Those active in the industry are better equipped than I to project this theme further.

Regulatory bodies, like management, feel the pulse of the public when rate increases are authorized. We know that by the volume of complaints. *Many industries have done splendid work in acquainting their customers with the underlying reasons for price increases,* but by and large, the bus industry has not done the

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same. It should disseminate accurate information so that the public may have a full understanding of the many problems confronting you.

It seems to me that it isn't entirely out of order to think of the bus industry as a sort of triumvirate—1st, the public; 2nd, the Public Service Commission; and 3rd, the transit company. This is from a recent decision:

"The sound solution of the problems confronting a transit system—seem to require active and understanding collaboration and cooperation of many other elements directly involved, including the company, the municipal authorities, the employees, business and civic interests and the general public."

We cannot engage in endless and fruitless efforts to preserve the solvency of companies subject to our regulatory powers. In that course lies no solution of this pressing problem because the public should not be burdened by a rate structure so high that it becomes oppressive. This, indeed, is a somber picture.

The commission's position in problems affecting bus transportation of the public is one of continuous study. Our duty is clear, but to exercise that duty, we must have available to us every scrap of pertinent information. Do not hesitate to give us the benefits of your experience; it will be welcome. The doors of my office, as well as those of the other commissioners and our staff, are open to you at all times, that both of us may be better able to fulfill our obligations to the public.

In closing, let me remind you that regulation sprang from the very importance of the industry itself. Joint problems of regulatory bodies and industry must make regulation sensible so as not to destroy progress and opportunity. Working together and in cooperation I am confident that we can accomplish a result that will be satisfactory not only to the public but to all parties concerned.

Dresser Industries Acquires Magnet Cove Barium

A proposal by Dresser Industries, Inc., Cleveland, to purchase the common stock of the Magnet Cove Barium Corp. of Houston, for approximately $2,800,000 in cash plus about 17,500 shares of Dresser common stock has been accepted by the majority stockholders of Magnet Cove, it has been announced by H. N. Mallon, President of Dresser Industries.

"The purchase of Magnet Cove," Mr. Mallon said, "represents another forward step in Dresser's program of long-term growth and makes possible the replacement of a significant portion of the earnings of three subsidiaries disposed of by Dresser last January. For example, Magnet Cove's estimated earnings for 1949, calculated on the basis of Dresser's presently outstanding shares should amount to about $.70 per share."

Magnet Cove Barium utilizes as its major raw material its deposits of barite at Malvern, Ark. Purchased materials enable the company to meet the full range of drilling fluid specifications demanded by the market.

"The use of mud compounds," Mr. Mallon said, "has increased in the last few years both in total quantity and in the relative amount used in drilling activity.

"Magnet Cove will therefore round out still further Dresser's service to the oil and gas industries as makers of equipment and supplies for the production, transmission and processing of oil and gas all the way from well to consumer use."

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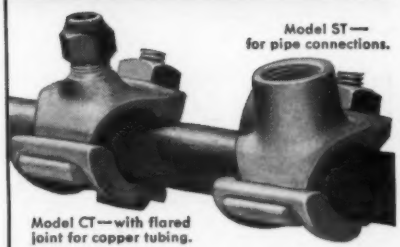

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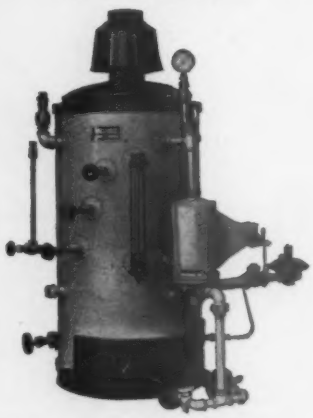

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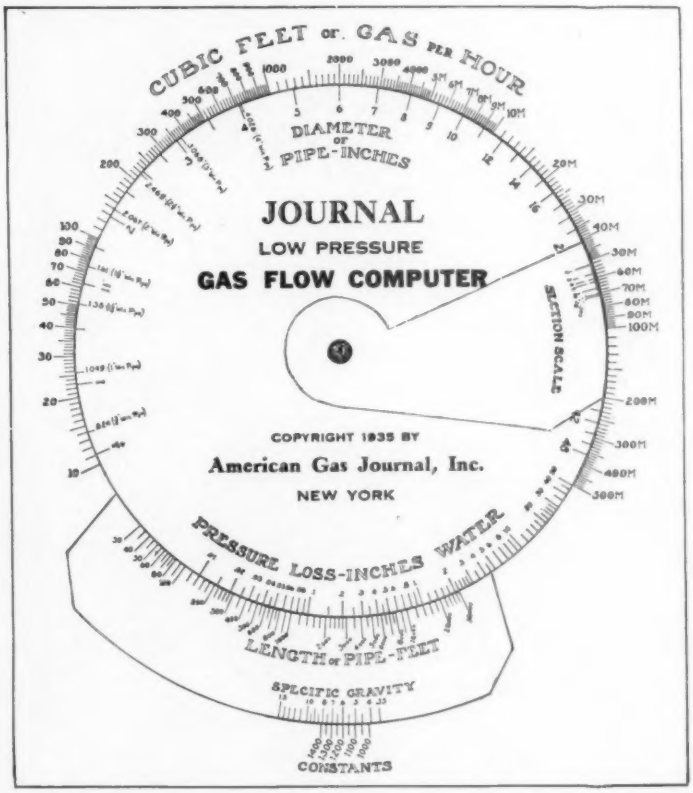

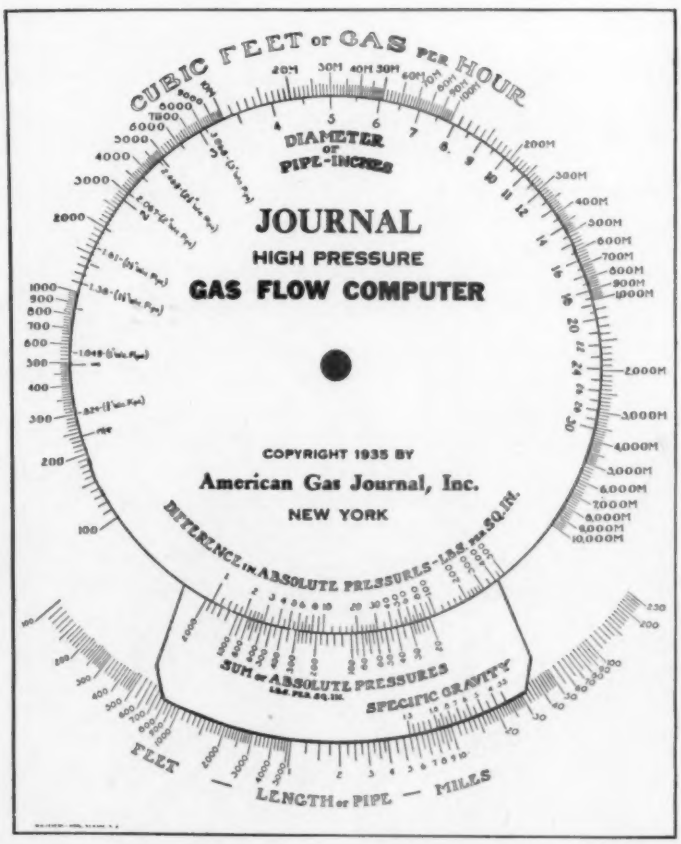

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